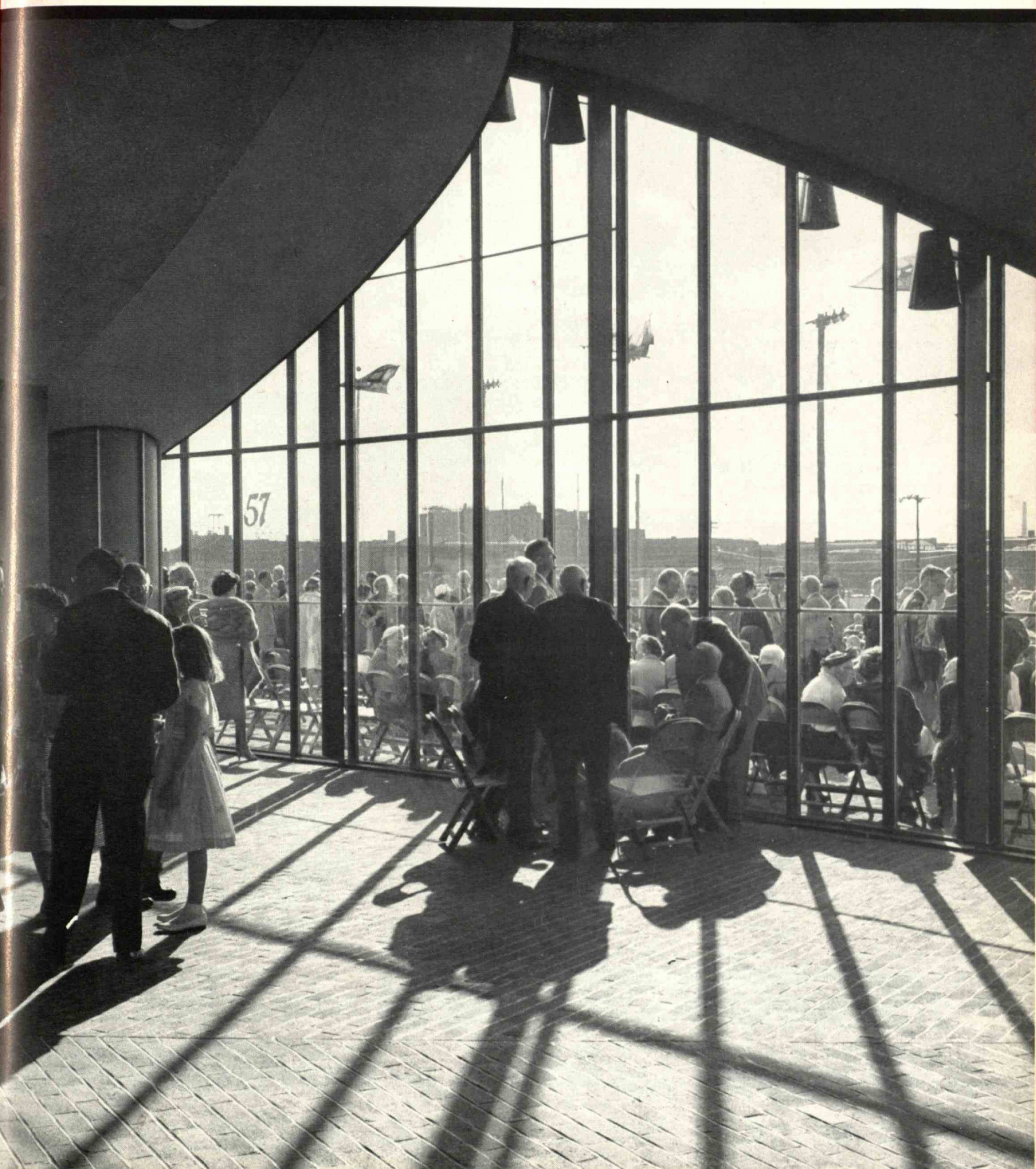
TECHNOLOGY REVIEW

July 1958



technology
review
Published by MIT

No. 7 in a series

Right off the Wire

An application of television shows a pilot the image of his plane superimposed on a map of the territory over which he is flying.

&

An X-ray inspection method for solid cast rocket fuels reveals any cavities or fissures that would interfere with burning.

&

A new machine at Simplex applies Condex Interlocked Armor over cable cores having diameters up to 4.5″.

&

An electronic guidance system will help river pilots to maneuver long strings of barges around the bends and under the bridges of the Mississippi.

&

A new facility for advanced research in thermonuclear reactions is expected to generate temperatures in the millions of degrees.

&

A land-mine exploder has been developed by the Army which will detonate buried explosives without damage to the exploder or the tank that carries it.

&

A new alkaline flashlight battery is said to last ten times as long as ordinary dry cells and to deliver more power.

&

A generator-powered flash-bulb holder is about the size of an electric razor. Half a turn of a wheel stores enough electricity in a capacitor to fire the bulb.

&

A television tube only five inches thick has been developed in England.

&

A process has been developed for electroplating copper on aluminum. The plating can be tinned, soldered or formed.

A new synthetic rubber is resistant to oils, fuels and solvents and retains its properties at temperatures as high as 400°F.

&

A new chemical compound slows the growth of any part of a tree without affecting the rest.

&

A new electronic instrument analyzes the sequence of chemical reactions in the burning of rocket fuels in one ten-thousandth of a second.

&

A single relay system across Canada from Halifax to Victoria will carry television programs and telephone conversations.

&

The floodlights at Niagara Falls have been redesigned to give ten times the illumination of the former twenty-five-year-old system with no increase in power consumption.

&

Further information on these news items and on Simplex cable is available from any Simplex office. Please be specific in your requests.

&

Among the United States exhibits at Brussels will be an outline of world history for the entire Christian era stored in a computer. Any item can be found in two-thirds of a second and printed in any one of ten languages.

&

The first digital computer fast enough to evaluate the performance of a missile in flight is said to be twenty-four times faster than preceding models.

&

A new X-ray technique reduces radiation exposure to a fraction of that now used for diagnosis.

&

A new truck transmission has twelve speeds in one gear box controlled by one lever.

A new machine can weigh and sort coins at the rate of 18,000 per hour with an accuracy of plus or minus one-fourth of one per cent.

&

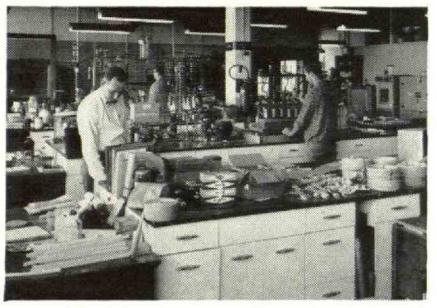
A new desk-top machine covers one or both sides of documents with clear plastic film.

&

A device for practice in marksmanship shoots, instead of a bullet, a flash of light, which shows on the target.

&

An ultra-sensitive space speedometer measures acceleration in any direction.



A Simplex Laboratory

At the Simplex plant in Cambridge, six modern, well-equipped laboratories similar to the one shown here are devoted to the never-ending search for new, better materials and methods which result in new, better wire and cable products. Over the years, this program of concentrated, intensive research has brought about a great number of the most important technical advances and product improvements that have made Simplex the leader in the wire and cable industry.

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Highest quality cables for: Mining
Power & Lighting • Construction
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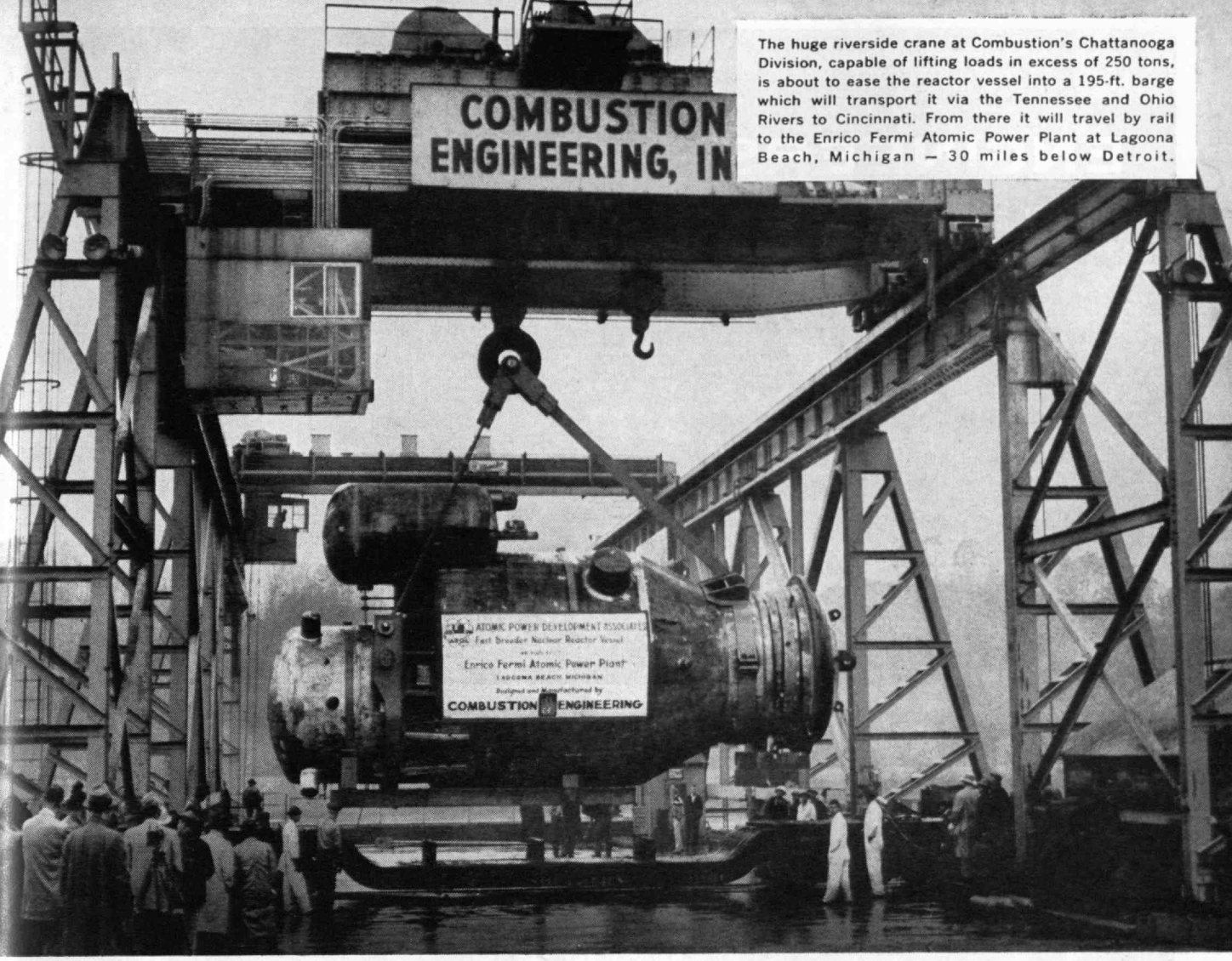
THE TECHNOLOGY REVIEW, July, 1958, Vol. LX, No. 9. Published monthly from November to July inclusive at Emmett Street, Bristol, Conn. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription, $4.00: Canadian and Foreign subscription, $4.50. Entered as second-class matter December 23, 1949, at the Post Office, at Bristol, Conn., under the Act of March 3, 1879.



The huge riverside crane at Combustion's Chattanooga Division, capable of lifting loads in excess of 250 tons, is about to ease the reactor vessel into a 195-ft. barge which will transport it via the Tennessee and Ohio Rivers to Cincinnati. From there it will travel by rail to the Enrico Fermi Atomic Power Plant at Lagoona Beach, Michigan — 30 miles below Detroit.

AMERICA'S LARGEST NUCLEAR COMPONENT

The nuclear reactor vessel shown here is the most remarkable stainless steel pressure vessel ever built. This 36-foot, 92-ton giant is the container for the nuclear furnace that will power the world's first full-scale, fast-breeder reactor power plant — the Enrico Fermi Atomic Power Plant. Designed by Atomic Power Development Associates, Inc., the nuclear section of this plant will be owned by Power Reactor Development Co., and the turbine-generator section by Detroit Edison Co.

Because of its vast size and complexity, the reactor vessel presented unique problems of design and fabrication. In reality, it comprises four separate cylindrical vessels welded together to form a single unit assembly, plus a large amount of internal shielding the fabrication of which involved the use of 65,000 square feet of stainless steel — all constructed and assembled with a precision never before attempted in work of this size and character. Additional parts of the vessel, scheduled for later shipment, will bring its total weight to about 200 tons.

No more than two or three plants in the world presently have the skills and facilities even to undertake the production of work of this kind. Combustion not only has the men and machines, but also the experience to produce such reactor vessels. Moreover, it is equipped and qualified to design and manufacture all other major components of complete nuclear power systems.

The Enrico Fermi Plant exemplifies the continuing, urgent drive by electric utility companies to generate electricity at the lowest possible cost, utilizing all developments modern science and technology can produce. Combustion is proud to have shared in this major step of the power industry to prepare itself for the age of the atom.

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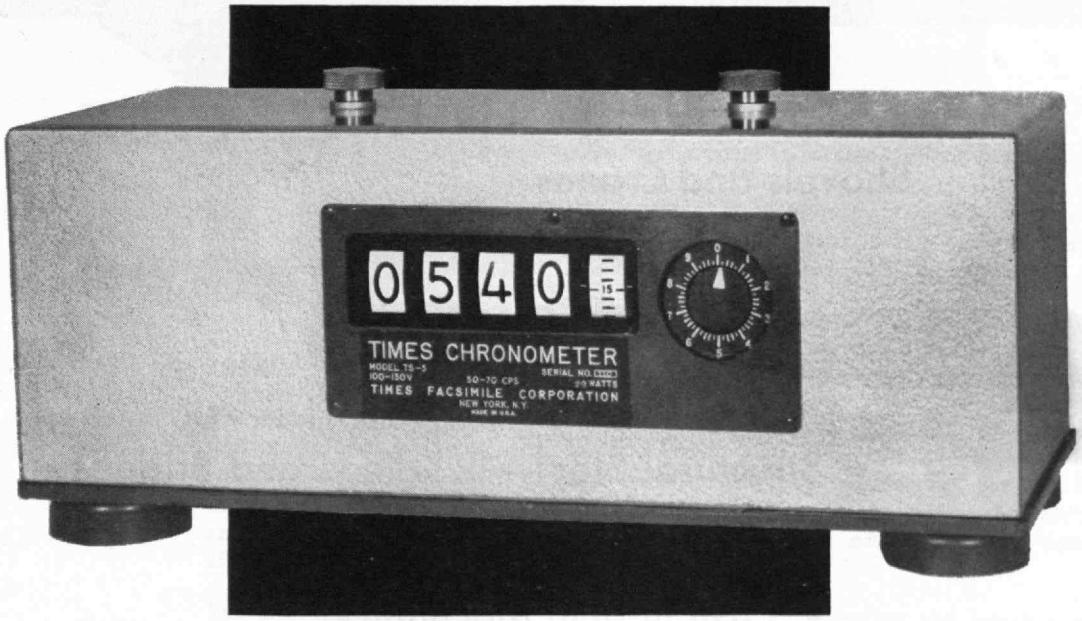

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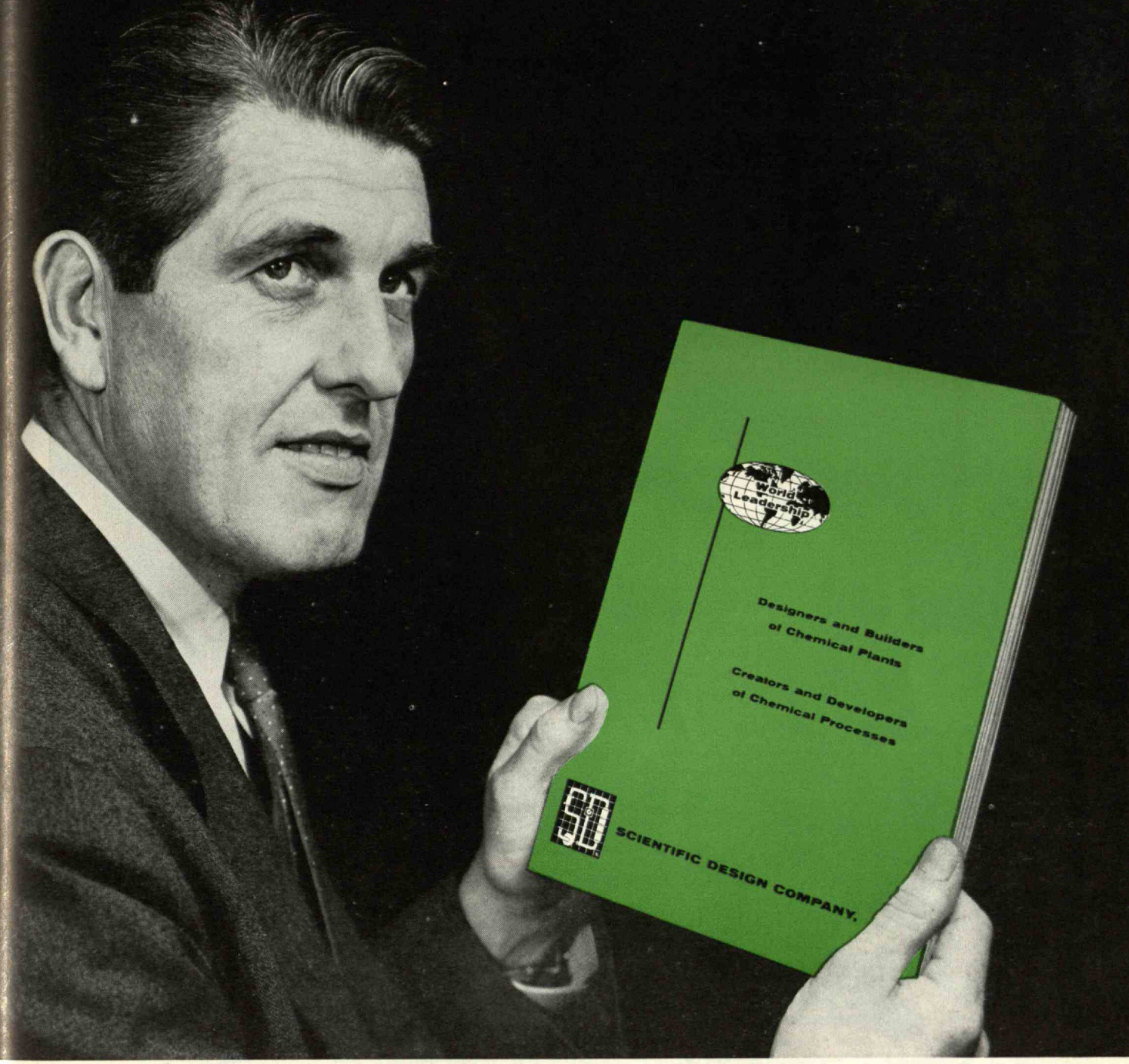
The Olivetti Divisumma 24, a high-speed single-keyboard printing calculator with automatic constant and memory, combines many individual computations into a single continuing calculation, eliminating re-entries, saving time and work.



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It is my pleasure to invite you to send for our new brochure, shown above. I believe it will be of interest to management as well as technical men in the chemical process industries.

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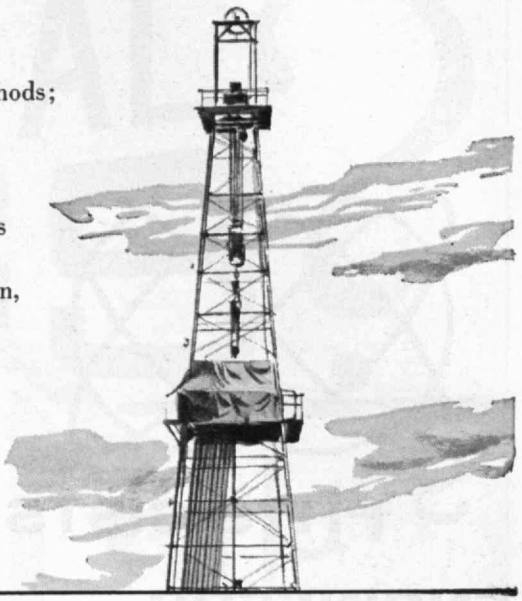

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A QUICK LOOK AT THE HUMBLE COMPANY

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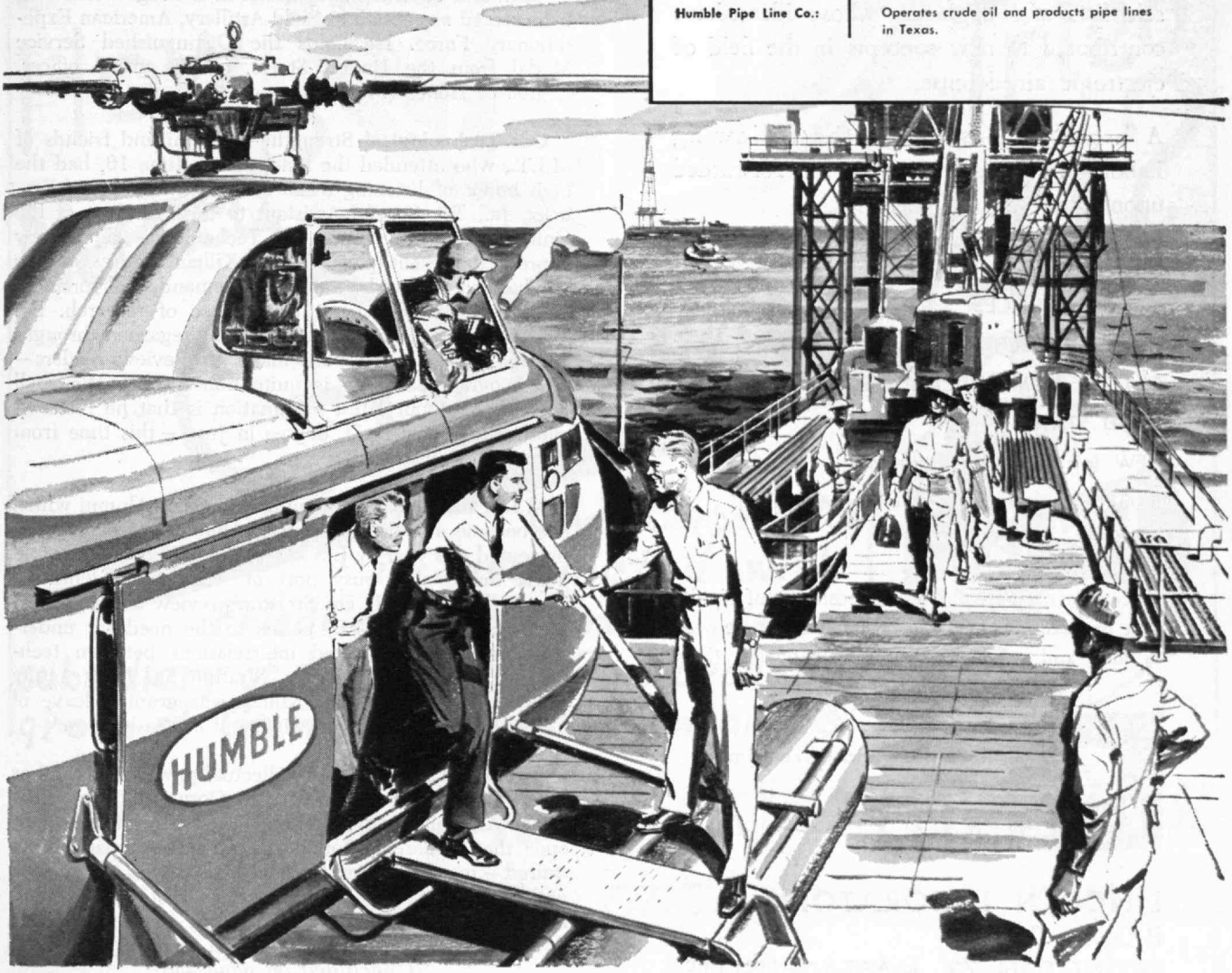
Refining Capacity:	280,000 barrels daily.
Retail Sales:	Texas and New Mexico. Leading Texas marketer.
Humble Pipe Line Co.:	Operates crude oil and products pipe lines in Texas.



THE TABULAR VIEW

Zest for Living. – In the baccalaureate address to members of the Class of 1958 (page 471), HAROLD L. HAZEN, '24, shows the strong correlation between intellectual curiosity and the meaning of a full life. Professor Hazen received the S.B., S.M., and Sc.D. degrees from M.I.T. in 1924, 1929, and 1931, respectively. He joined the Institute's staff in 1925 as research assistant, became assistant professor in 1931, associate professor in 1936, and full professor and head of the Department of Electrical Engineering in 1938. From 1934 to 1935, he was a member of the faculty of Ohio State University in the first of M.I.T.'s exchange professorships. He has been dean of the Graduate School since 1952.

Responsibility to Serve. – That education imposes heavy responsibility for service is emphasized (page 475) in the commencement address given this year by JOHN J. MCCLOY. Mr. McCloy has A.B. and LL.B. degrees from Amherst and Harvard, in addition to about a dozen doctorates. He was Assistant Secretary of War during World War II, president of the World Bank, 1947 to 1949, and U. S. High Commissioner for Germany from 1949 to 1952. He is at present chairman of the board, Chase Manhattan Bank; a director of four of the nation's largest corporations; and trustee of half a dozen foundations and medical and educational institutions. During World War I, he served as captain in Field Artillery, American Expeditionary Force. He holds the Distinguished Service Medal from the United States, and is grand officer, Legion of Honor (France).

Our Technological Strength. – Alumni and friends of M.I.T., who attended the luncheon on June 16, had the high honor of listening to an address by JAMES R. KILLIAN, JR., '26, Special Assistant to the President of the United States for Science and Technology. The Review is proud to present (page 479) Dr. Killian's address, which emphasized that today's exacting demands call for more engineers nurtured in an atmosphere of research. Dr. Killian is so well known and so highly regarded throughout the nation – and particularly to Review readers – that biographical data is quite unnecessary. We shall only say that our latest information is that he received another honorary Sc.D. degree in June – this time from Columbia University.

M.I.T. Progress. – The annual report to Alumni which has become a traditional part of Alumni Day events was presented this year by J. A. STRATTON, '23, who currently holds the doubly busy post of Acting President and Chancellor of M.I.T. Dr. Stratton's review of progress at the Institute (page 482) points to the need for understanding the complicated interrelations between technology and our society. Dr. Stratton has been Acting President since President Killian was granted leave of absence for an important assignment in Washington.

Lesson for America. — Intellectual power is as vital as horsepower, according to MORRIS COHEN, '33. Speaking at the Alumni Day symposium, Dr. Cohen told his audience that a more profound educational approach is required – in which scientific analysis becomes part of our nation's normal thought processes. Professor Cohen's remarks, which The Review is happy to present (page 483), are based on observations of a trip to the U.S.S.R.

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THE TABULAR VIEW

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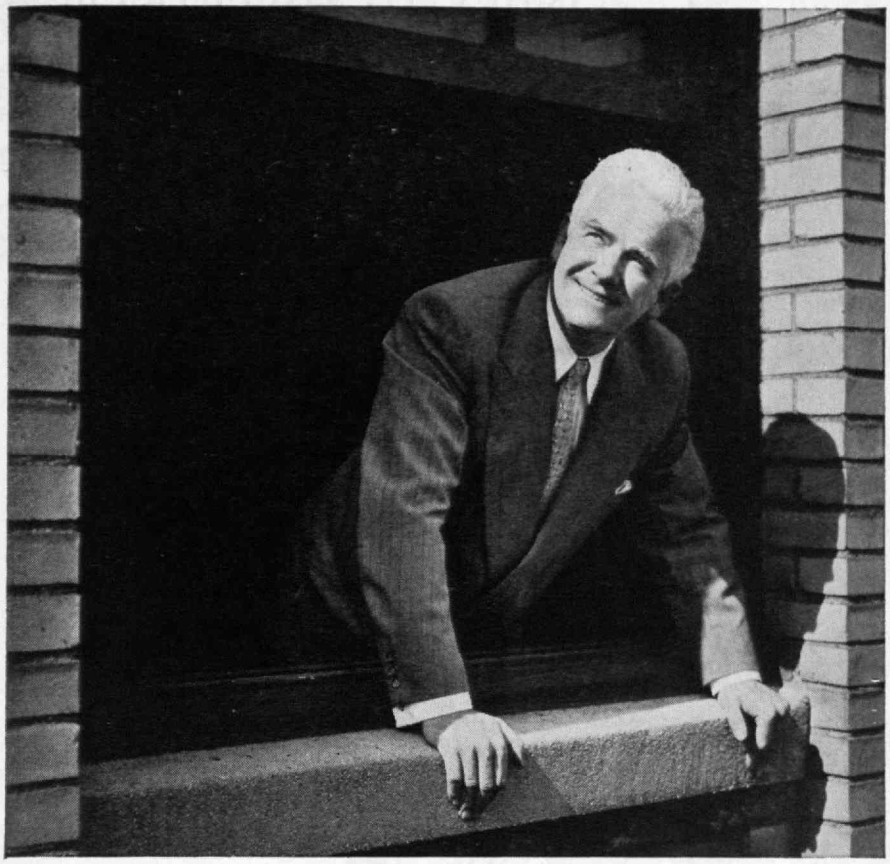
last winter. Dr. Cohen received the S.B. and Sc.D. degrees from M.I.T. in 1933 and 1936, respectively, and has been in the Department of Metallurgy since his student days. In 1945, and again in 1949, he received the Howe Medal from the American Society for Metals.

Research in Education. – As undergraduate training in technical subjects becomes progressively more scientific, stronger programs for engineering instruction are under study and are being developed. This was the principal message delivered by EDWIN R. GILLILAND, '33, in his symposium address, which The Review is pleased to present (page 489). Dr. Gilliland has been at M.I.T. since 1933, when he received his Sc.D. degree. He is coauthor of several books, recipient of a number of awards in chemical engineering, and has held a variety of important teaching and administrative posts at M.I.T.

Wild Blue Yonder. – In his symposium address (which The Review presents on page 491), HOLT ASHLEY, '48, urged capitalizing on the natural motivations and enthusiasms of students to improve their education, and showed how this was being accomplished in the Department of Aeronautical Engineering. Dr. Ashley received the B.S. degree from the University of Chicago in 1944, and from M.I.T. the S.M. in 1948 and the Sc.D. in 1951. He has been a member of the National Advisory Committee for Aeronautics, became associate professor of aeronautical engineering in 1954, and two years later was one of 10 "outstanding young men" selected by the Boston Junior Chamber of Commerce.

The Review is not published during the summer months following July. This issue, therefore, concludes Volume 60. Number 1 of Volume 61 will be published on October 27 and dated November. Readers who bind their copies are reminded that if they possess nine issues of Volume 60, their files are complete. An index to the volume will be ready on September 15 and will be supplied post free upon request.



Bought Blue Sky ... Reaped Profit

Some industries invest in electrical precipitators for one reason only—to avoid creating smoke nuisance. Blue sky—clean stack discharge from a plant—is a good advertisement, basic in any factory community relations program.

But here is an instance where electrical precipitators pay high *cash* dividends as well. A major producer of pulp and paper uses 22 Cottrell Precipitators, installed by Research Corporation, to recover salt cake from various processes. Over 150,000 tons of this chemical are thus reclaimed each year for re-use—$3,000,000 that goes on the happy side of the ledger rather than up the stacks.

In a case like this, the collection efficiency of the equipment is of high dollar importance, just as it is in oil refineries where catalyst is recovered . . . in chemical plants where sulphuric and phosphoric acids are recovered . . . and in non-ferrous smelting plants where escape of valuable metallic dust and fume is prevented.

The higher the efficiency, the bigger the pay-off . . . or the cleaner your stacks will look, if your objective is nuisance abatement. But how do you make sure of getting highest efficiency?

First, remember that electrical precipitators are no simple, standard device. For best results, for true economy, each installation must be custom engineered. And that engineering should be based on successful past experience in meeting similar requirements and conditions.

The designer-builder with by far the largest total and broadest-ranging experience is Research Corporation. Research has designed and sold more than 2000 precipitators during the past 40 years. This experience is available to help you solve your problem, whether it's gas cleaning, nuisance abatement, recovering valuable materials, or, perhaps, some precipitator application that has never been attempted before.

Your questions will be welcomed—and please be sure to write for a copy of Bulletin GB, a quick summary of dust collection problems and facts of interest to management men.

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Dr. Joseph W. Barker, '16,
Director

V. P. Cook, '35,
Field Engineer

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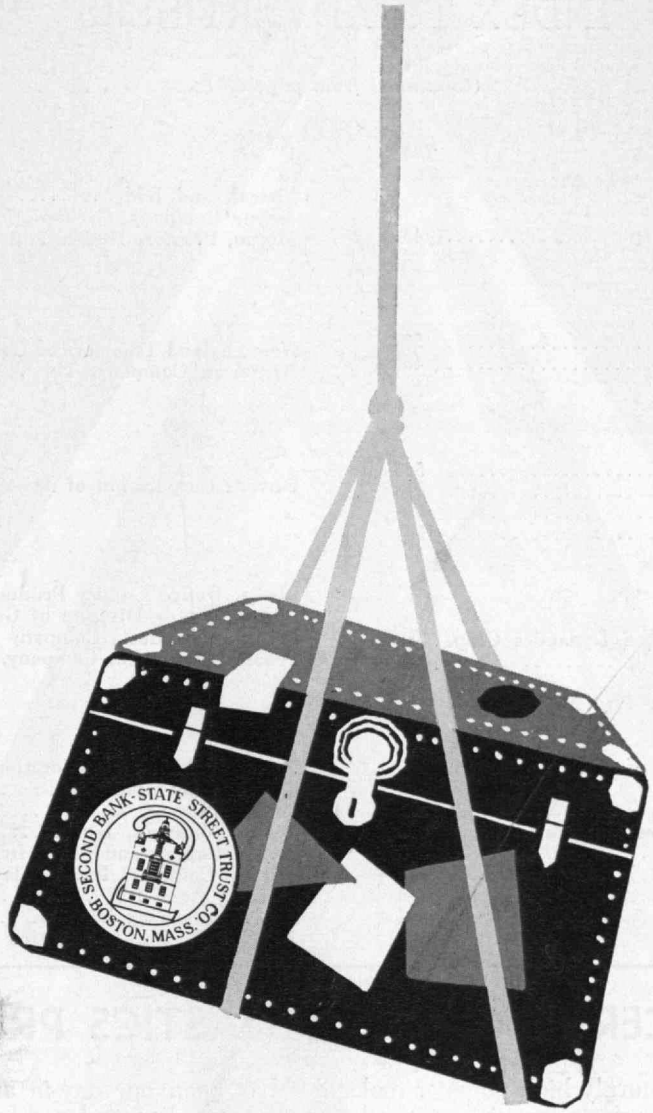

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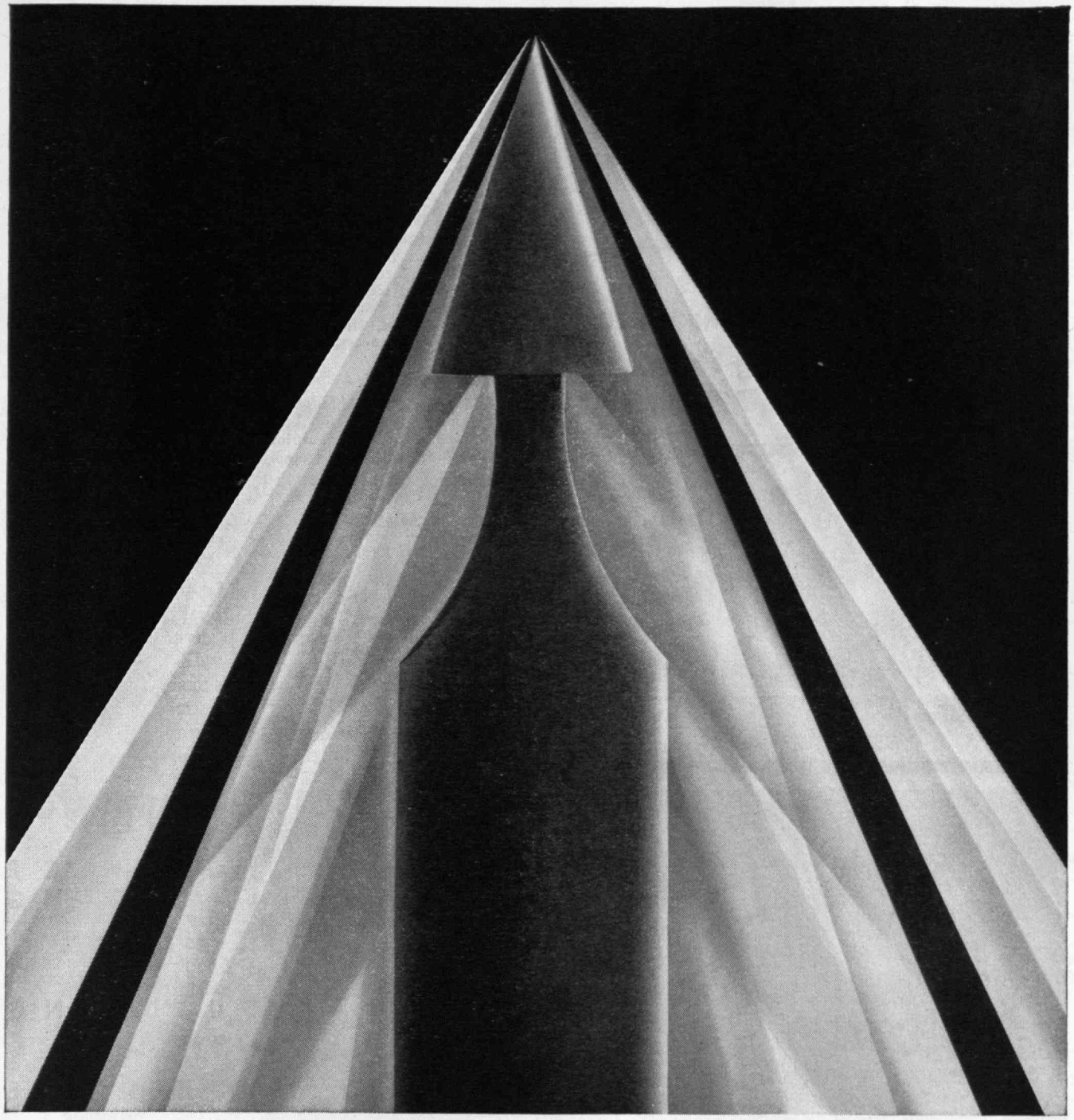

Shock wave around a simulated missile

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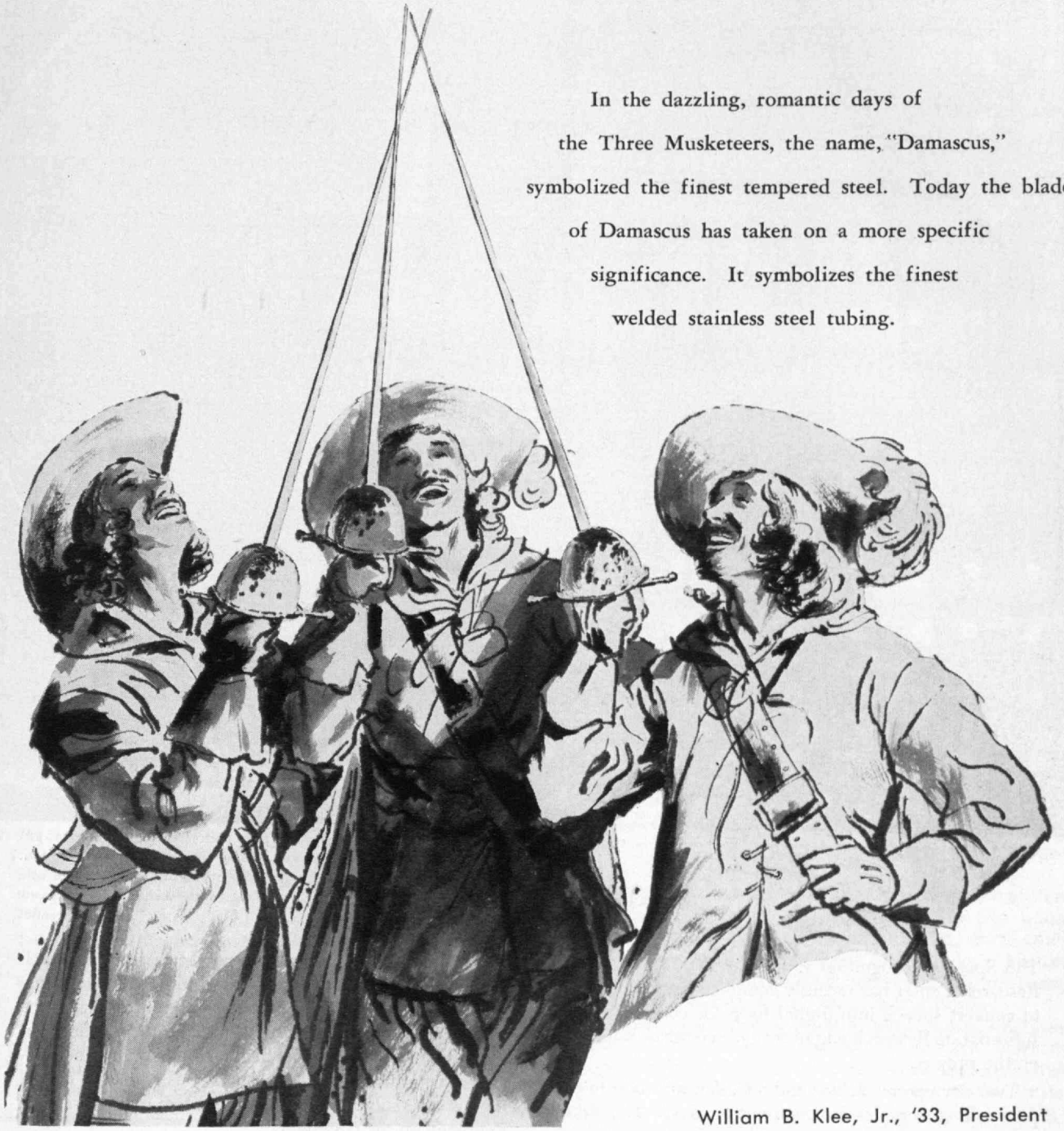
(*Concluded from page 450*)

The Blade of Damascus

In the dazzling, romantic days of the Three Musketeers, the name, "Damascus," symbolized the finest tempered steel. Today the blade of Damascus has taken on a more specific significance. It symbolizes the finest welded stainless steel tubing.



William B. Klee, Jr., '33, President

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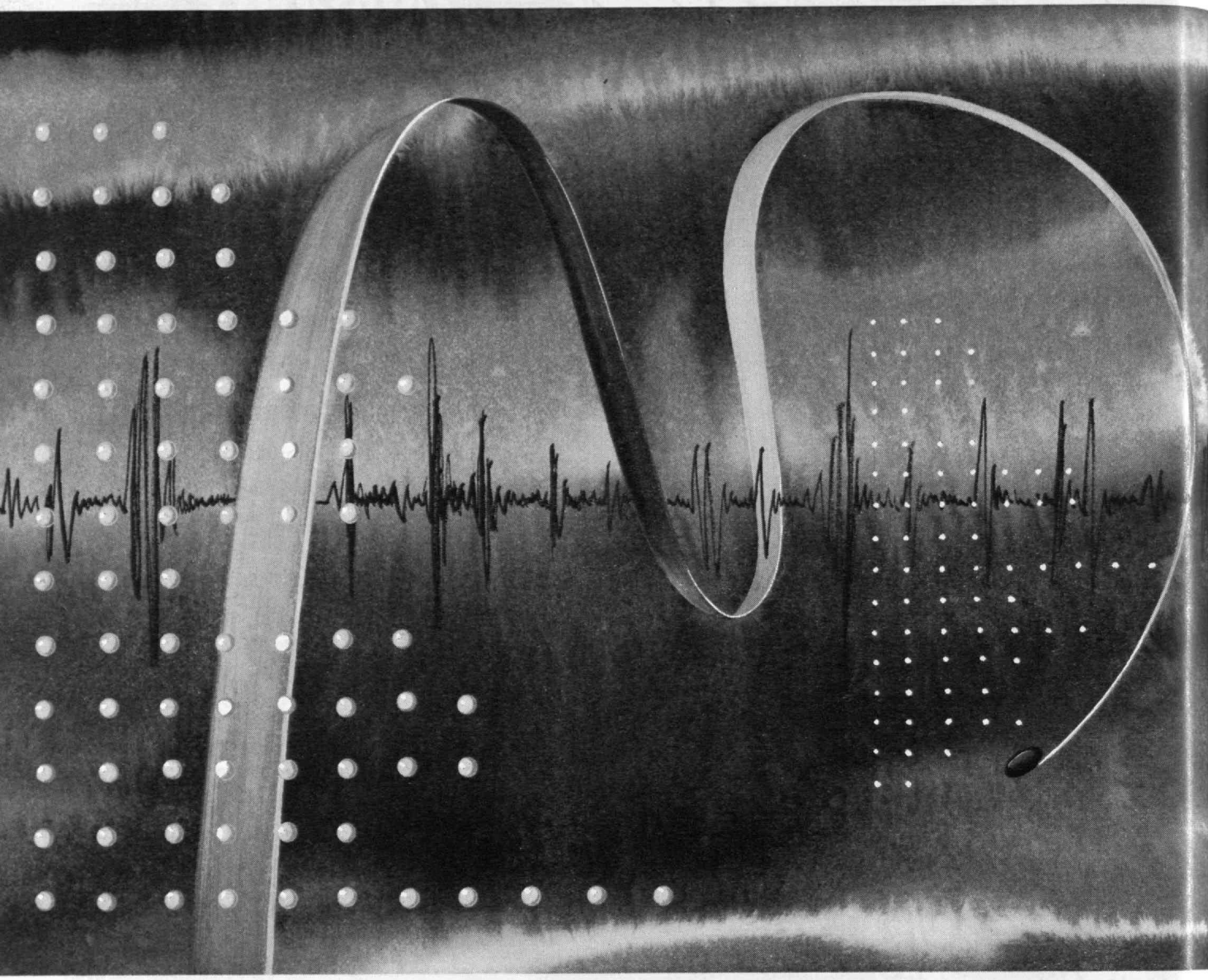
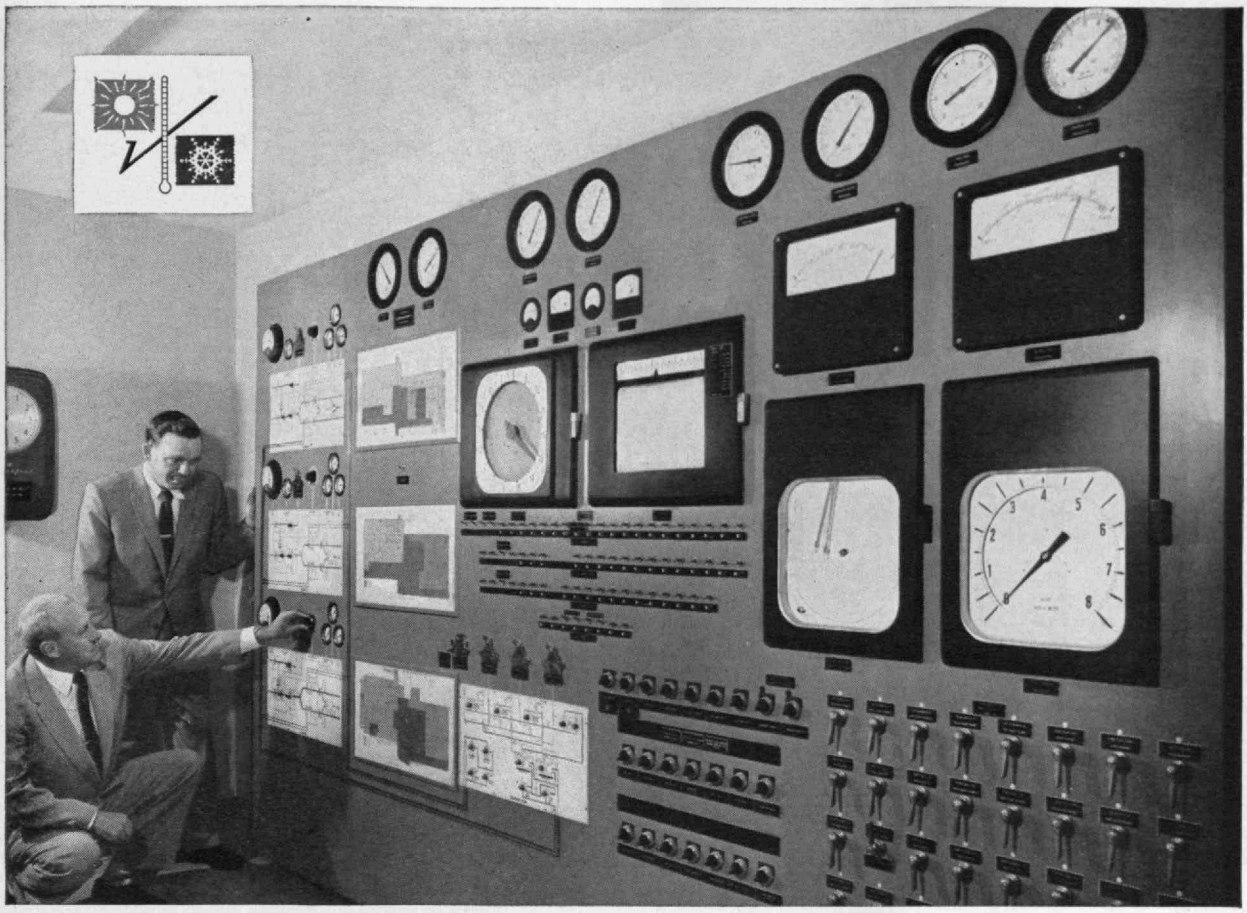


Analysis of speech

The Speech Recognition Project at the IBM Yorktown Research Center has recently completed equipment able to convert speech into digital form for computer input. Information Research engineers and scientists cooperated on the project.

Two devices, an *Editor* and a *Coder*, are used to prepare speech samples for computer analysis. The *Editor* aids selection of "speech events" from continuous speech. In this operation edit pulses are written on a second track of an audio tape opposite speech events desired. The second device, a *Coder*, plays back the audio portion of edited tape through equalizer, compressor, and low-pass filter components to an analog to digital converter. As instructed by edit pulses, the converter samples speech signal amplitude and converts amplitude at each sample point to a six-point binary number. Simultaneously, the edit pulse also causes control circuits to bring the computer system tape unit up to speed and writes the converted signal on digital tape. Data thus stored on digital tape is then subject to a versatile system of analysis programmed on the computer.

The project is concerned with the question, "What properties do acoustic signals possess which aid in distinguishing speech sounds one from another?" It is hoped that this research will lead to the development of useful and natural systems for verbal control of machines.



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Johnson Control Centers are applied to buildings of all types and sizes. They assure the very best, most productive working environment air conditioning can produce. And major savings in operating costs and manpower quickly recover the initial investment. Your local Johnson representative has all the facts. Johnson Service Company, Milwaukee 1, Wisconsin. 105 Direct Branch Offices.

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F. W. Conlon, '50, Sales Engineer, Union, N. J.

E. C. Doyle, '47, Branch Manager, Albany, N. Y.

K. L. Holmes, '51, Research & Development, Milwaukee

W. G. Martin, '45, Branch Manager, Hartford, Conn.

K. A. Wright, '19, Vice President & Central District Manager, Evanston, Ill.

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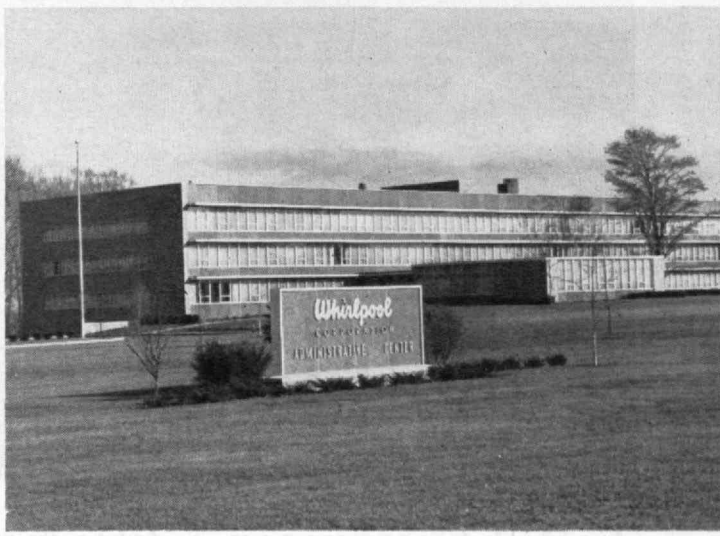

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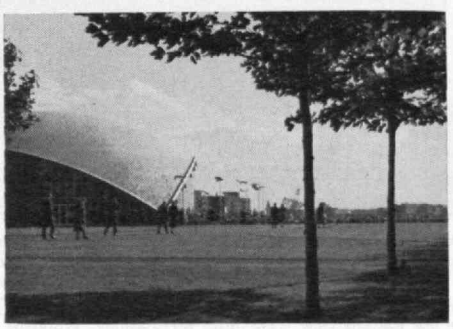
THE TECHNOLOGY REVIEW

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONTENTS for JULY, 1958,

Vol. 60, No. 9



It's windy on the mall for those taking part in the Alumni Day social hour.

This photograph, as well as all others in the issue, by M.I.T. Photographic Service.

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An attentive audience listens to Alumni Day address delivered by Dr. Killian, Special Assistant to President Eisenhower for Science and Technology (standing at microphone). Those at head table are (left to right): Robert E. Jordan, 3d, '58, Mrs. Gilliland, Mrs. Skinner, Professor Edwin R. Gilliland, '33, Mrs. Jordan (partly hidden by tent pole), Mrs. Roddy, David W. Skinner, '23, Mrs. Karl T. Compton, Gilbert M. Roddy, '31, Mrs. Stratton, Dr. Killian, Saxton W. Fletcher, '18, Mrs. Killian, Acting President J. A. Stratton, '23, Mrs. Lobdell, H. Leston Carter, '08, Mrs. Fletcher, H. E. Lobdell, '17. Beyond the scope of the present view were also: Mrs. Ashley, Professor Morris Cohen, '33, Mrs. Cohen, and Professor Holt Ashley, '48. Portion of audience shown here are honored guests.

The Technology Review

VOL. 60, NO. 9 JULY, 1958

The Trend of Affairs

Tech Sailors Are National Champions

■ William S. Widnall, '59, of Saddle River, N.J., led the M.I.T. sailors to a victory over seven rival finalists in the 22d sailing of the North American Intercollegiate Dinghy Championship. This competition for the Henry A. Morss Memorial Trophy was held at Newport Harbor, Calif., June 16 to 20.

Widnall compiled an individual B division score of 131 points out of a possible 144 in the 32-race event. Captain C. Dennis Posey, '59, of Larchmont, N.Y., scored 98 points in A division, giving the M.I.T. sailors a total of 229 points to 213 points for the University of Michigan. The Michigan sailors, led by A division skipper Bruce Goldsmith, took a small early lead in the races. They held their lead until the 25th race, when the Tech sailors went into first place to coast to victory. Bill Widnall's score included 10 firsts, 3 seconds, 2 thirds, and a sixth in his 16 races.

The other colleges, in order of finish, were: defender, the U. S. Naval Academy, 203; Notre Dame, 179; Brown, 170; Occidental, 164; Stamford, 156; and the U. S. Merchant Marine Academy, 108.

In the preliminary team championships between the four districts of the Intercollegiate Yacht Racing Association, Midwest defenders Michigan and Notre Dame scored a close victory over M.I.T. and Brown (representing New England) to retain possession of the Sir Thomas Lipton Memorial Trophy. The Midwest took an early 2-0 lead, which the New England teams tied at 2-2. The Midwest then took the next race by three-fourths of a point and the last by a more comfortable margin when Widnall failed to hear a recall hail for being early at the start.

The National Championship was a fitting climax to a successful year, which saw the team victorious in 12 of the 21 events in which they competed. The Tech team is also holder of the Eastern, New England, and Boston area championships. M.I.T. has won the Morss Trophy 10 times in the last 22 years, has been in second place three times, in third place twice, and in fourth place three times.

Members of the M.I.T. Nautical Association include C. Dennis Posey, '59, William S. Widnall, '59, Robert S. Hopkins, Jr., '60, Carol M. Dorworth, '60, and Jan A. Northby, '59.

Oscar Hedlund Retires

■ Track coach at M.I.T. since 1924, Oscar F. Hedlund retired July 1 from a post in which he has won thousands of warm friends. The announcement was made at a testimonial dinner held at the Faculty Club on the evening of May 2, and ends an active 35-year career of service to M.I.T. students.

The past and present track men who gathered to fete Coach Hedlund were joined by Acting President J. A. Stratton, '23, Ralph T. Jope, '28 (who played a significant role in managing athletic activities before a full-time athletic director was added to the Institute staff), and many other members of the Faculty and Administration. Approximately 150 attended the dinner, and more than 250 track men of former years wrote letters expressing their appreciation of Oscar's coaching, friendly advice, and personal interest.

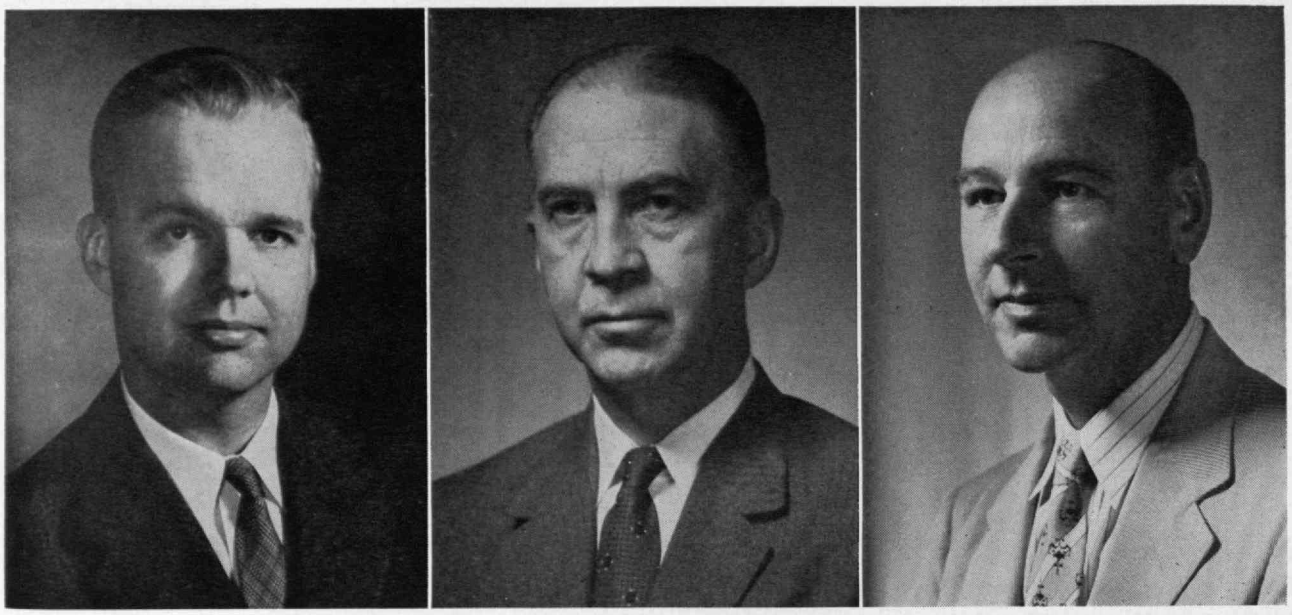
A plaque, unveiled at the dinner by Richard L. Balch, Director of Athletics, recognizes Oscar Hedlund's influence on the Institute's athletic program, and will be placed in the Du Pont Athletic Center when construction on the new buildings is completed. The plaque reads:

Oscar F. Hedlund

As a friend to each man he encouraged the full development of character and athletic potential. By giving so much of himself he has set a standard of coaching excellence for M.I.T. athletics and won a place of affection in the heart of every track man.

Although known and highly regarded mainly for his work in track and cross-country coaching during the past 35 years, Hedlund himself was a star runner in former years. He is former world's champion in the mile run, and was a member of the American Olympic team in 1912. In recognition of his great interest in sports, the New England Olympians elected him to be their new president.

On May 28, 1956, Mr. Hedlund was elected an honorary member of the M.I.T. Alumni Association, and he was inducted into this select group at Alumni Day events on June 11, 1956, as recorded on page 491 of the July, 1956, issue of The Review.



As recorded below and on the opposite page, the three Institute Faculty members shown above are to assume new duties – Roy Lamson (left), *as professor of humanities; Howard R. Bartlett* (center), *as master of Burton House; and Joseph H. Keenan, '22* (right), *as head of the Department of Mechanical Engineering.*

Pointed Appointments

■ E. P. Brooks, '17, Dean of the Institute's School of Industrial Management, has announced the appointment of Howard W. Johnson as Associate Dean of the School, effective July 1.

Mr. Johnson has been associate professor of industrial management and director of the Executive Development Program at M.I.T. since 1955. He has been responsible for the administration of the Sloan Fellowship Program, which brings 36 of the country's outstanding young executives to M.I.T. each year to work for a master's degree, and provides for two 10-week sessions each year for senior executives who wish to broaden their understanding of decision-making and the environment of business.

Professor Johnson received his A.B. degree in economics, with honors, from Central College in Illinois, and his M.A. degree from the University of Chicago. He has also done graduate work at Indiana University and the University of Glasgow in Scotland. Before coming to M.I.T. he was assistant professor of industrial relations and director of management programs in the Industrial Relations Center at the University of Chicago; assistant director of personnel administration for General Mills, Inc.; and a member of the staff of Robert N. McMurry and Company, management consultants, in Chicago.

John E. Burchard, '23, Dean of the Institute's School of Humanities and Social Studies, announced that Roy Lamson, former Professor of English and Dean of Freshmen at Williams College, has been appointed professor of humanities at the Institute. Dr. Lamson has been at M.I.T. as a visiting professor for the past year.

After attending Cambridge High and Latin School, Professor Lamson received A.B., A.M., and Ph.D. degrees from Harvard University and was an instructor at Harvard for three years. He joined the staff of Williams College in 1938. During World War II he served in the War Department Bureau of Public Relations and later in the Historical Division, being assigned to Italy and then France and Germany. He left Williams College again in 1951 to serve for nearly three years as historian of Supreme Headquarters Allied Powers in Europe.

As a scholar Dr. Lamson's special interest is in the English Renaissance, and he has written extensively on ballads and Seventeenth Century music.

Keenan Heads Course II

■ Appointment of Joseph H. Keenan, '22, as Head of the Department of Mechanical Engineering at the Institute, was announced early in June by Julius A. Stratton, '23, Acting President. Professor Keenan succeeds Professor Jacob P. Den Hartog, who has served with distinction in this post since 1954 and who will now return, at his own request, to full-time teaching and research.

Professor Keenan was graduated from M.I.T. with a degree in Naval Architecture in 1922. He was a turbine design engineer for the General Electric Company in Schenectady, N.Y. from 1922 to 1928, and from 1928 to 1934 was a member of the faculty at Stevens Institute of Technology. He returned to M.I.T. in 1934 as an associate professor of mechanical engineering. He has served the National Advisory Committee for Aeronautics in studies of such problems as propulsive systems, internal flow and recovery of power from exhaust gases, and has been a consultant to industry on new methods of aircraft propulsion and other problems of mechanical engineering.

Professor Keenan is a fellow of the American Society of Mechanical Engineers and has been secretary and chairman of the Applied Mechanics Division of that Society. He has served on five international committees on the properties of steam and is author of a number of books on thermodynamics and co-

author of "Thermodynamic Properties of Steam," a set of tables which has influenced design of modern equipment in the entire steam-power industry. He has served in England as a Fulbright Professor and as lecturer at both Imperial College of Science and Technology, and Cambridge University.

In 1955, the American Society of Mechanical Engineers awarded the Worcester Reed Warner Medal to him for "his outstanding contribution to the permanent engineering literature of steam, air and gases."

Professor Keenan is a fellow of the American Academy of Arts and Sciences, holds honorary membership in the Association of Physics Teachers, and is a member of the Institute of the Aeronautical Sciences, the American Society for Engineering Education, the American Society of University Professors, Tau Beta Pi, and Sigma Xi.

Professor Den Hartog, who was born in Java and was graduated from Delft Technical University in Holland, came to the United States in 1924 and joined the staff of the Westinghouse Electric and Manufacturing Company. He became a member of the faculty of Harvard University in 1932. During World War II he served in the Navy Bureau of Ships and, as an authority on vibrations, participated in the trials of practically every new type of ship. He assumed a professorship at M.I.T. in 1943 and became head of the Department of Mechanical Engineering in 1954.

Professor Den Hartog received the Worcester Reed Warner Medal in 1951 and last November gave the Thomas Hawksley Lecture in London, the first American ever to have been honored by an invitation to give the lecture.

Master of Burton House

■ Appointment of Howard R. Bartlett, Head of the Department of Humanities, as master of Burton House at the Institute was announced early in May by Julius A. Stratton, '23, Acting President. This is the first step in a plan by which all dormitories will have resident masters and tutors.

In 1951 the Institute inaugurated a system by which a "Faculty resident" was appointed to each house whose responsibility was that of counseling and guiding students. Under the new plan, a professor will be appointed as master of each house and the program of counseling and guidance will be extended. The master will be assisted by as many as two senior tutors, who will be junior members of the Faculty, and by several tutors, who are likely to be graduate students. Each house will also have nonresident associates – distinguished members of the Faculty who will be invited to participate in student affairs.

Appointment of the master and tutors for Burton House will be effective in the fall of 1958. The plan later will be extended to other houses. In announcing the new plan, Dr. Stratton said:

"We believe that an important part of education is the association between undergraduates and mature scholars. The new plan is the logical development from the beginning made seven years ago and should provide profitable new opportunities for students to share on an informal basis with Faculty members in the educational process. We hope that each house will develop its own character and tradition, making for a community spirit and a high level of personal achievement."

On the Horizon

November 8, 1958 – 13th M.I.T. Alumni Regional Conference, Albuquerque, N.M.

As master of Burton House, Professor Bartlett succeeds E. Neal Hartley, Associate Professor of History, who has been Faculty resident for the past two years. Professor Bartlett is head of the Department of Humanities and has taught English and history since he came to M.I.T. in 1929. He is a native of Auburn, Maine, and has degrees from Dartmouth College and Harvard University.

Last fall Professor Bartlett went to India as an American Specialist in the Leaders in Specialist Division, International Exchange Services, Department of State, consulting on general education in a project co-sponsored by the Indian Ministry of Education. For a month he was at the University of Roorkee, where he gave six lectures, and for a month he was at the University of Bombay, working with representatives of 16 affiliated colleges.

Professor Bartlett is former chairman of the Division of English and the Humanistic-Social Division of the American Society for Engineering Education.

William H. Lawrence: 1868-1958

■ Professor Emeritus William H. Lawrence, '91, former chairman of the Division of Drawing and the Architectural Engineering Course, and curator of the Lowell Institute, died on June 12. He was 89 years old.

Professor Lawrence had a long association with M.I.T., from the time of his graduation in 1891 until his retirement in 1938. Following graduation he became an instructor in architecture; in 1896 he was appointed an assistant professor, in 1901 associate professor, and in 1909 full professor. He served as chairman of the Department of Architecture from 1914–1919, and in 1920 was made chairman of the Division of Drawing. He became chairman also of the Architectural Engineering Course in 1927 and served in both capacities until his retirement in 1938, as professor of architectural engineering, emeritus.

He also had a long association with the Lowell Institute, as a Faculty member from 1912 to 1943 and as curator from 1921 to 1953. During the year 1924–1925, Professor Lawrence lectured on architectural construction at Harvard University. He was a fellow of the American Association for the Advancement of Science, and a member of the American Institute of Architects and of the Boston Society of Civil Engineers. He is author of the book *Principles of Architectural Perspective*, second edition, a textbook for a short but comprehensive course in perspective for scientific and technical schools.

Professor Lawrence is survived by his wife, Gertrude, and his brother, Ralph R. Lawrence, '95, who is professor of electrical machinery, emeritus.

Individuals Noteworthy

■ Prominent in the news since The Review's last issue were the 18 promotions, elections, or appointments enumerated below:

George M. Sprouls, '12, as Technical Director, American Rayon Institute, Inc. . . . *Walter J. Hamburger, '21,* as Vice-president, the Textile Institute, Edinburgh, Scotland . . . *Frederick S. Blackall, Jr., '22,* as a Director, National Shawmut Bank, Boston . . . *Roscoe H. Smith, '23,* as President, Cleveland Engineering Society, Cleveland, Ohio . . .

Walter E. Campbell, '26, as Vice-president, Boston Society of Architects . . . *John M. Gaines, '26,* as Associate Technical Director, Linde Company Division, Union Carbide Corporation . . . *Elisha Gray, '28,* as Chairman, Whirlpool Corporation . . .

Alexander L. H. Darragh, '29, as Executive Editor, *Transportation Supply News,* Chicago . . . *John C. King, Jr., '33,* and *Bruce A. Lamberton, '44,* respectively, as Manager of Sales and Chief Engineer, Intrusion-Prepakt, Inc., Cleveland, Ohio . . .

Frank R. Milliken, '34, as Executive Vice-president, Kennecott Copper Corporation . . . *Elmer J. Roth, '35,* as Comptroller, Whitin Machine Works, Whitinsville, Mass. . . . *Howard S. Turner, '36,* as a Director, Industrial Research Institute, Inc. . . .

William B. Bergen, '37, as a Director, The Martin Company, Baltimore, Md. . . . *Karl Pfister, 3d, '40,* as Executive Director of Developmental Research, Merck Sharp and Dohme Research Laboratories, Rahway, N.J. . . . *Roger E. Robertson, '41,* as Chief Engineer, B and H Instrument Company, Fort Worth, Texas . . .

James L. Knapp, '50, as Manager, Glass Technology Department, Corning Glass Works, Corning, N.Y. . . . *William C. Mercer, '56,* as General Plant Supervisor, New England Telephone and Telegraph Company.

■ Special honors recently announced or awarded to Alumni include:

To *Robert B. Sosman, '04,* the Trinks Award, highest honor of the industrial heating industry, by the Trinks Industrial Heating Award Committee . . . to *Warren K. Lewis, '05,* a Founders Award for achievements which have an extraordinary impact on Chemical Engineering, by the American Institute of Chemical Engineers . . .

To *Marshall B. Dalton, '15,* an honorary doctorate of engineering, by Worcester Polytechnic Institute . . . to *Herbert J. Gilkey, '16,* the Henry C. Turner Medal for "advancing the knowledge of properties of plain and reinforced concrete," by the American Concrete Institute . . .

To *C. Richard Soderberg, '20,* an honorary doctorate of science by Tufts University . . . to *Herbert L. Beckwith, '26,* the grade of Fellow, by the American Institute of Architects . . .

To *James R. Killian, Jr., '26,* honorary doctorates of science, by Columbia University and the College of Wooster, and of laws, by Brandeis University . . . to *Michael L. Radoslovich, '26,* its 1958 Medal for outstanding service in enhancing New York City's school buildings with murals and sculpture, by the Municipal Art Society . . .

To *Howard A. Chinn, '27,* the grade of Fellow, by the American Institute of Electrical Engineers . . . to *Edward D. Stone, '27,* membership, by the affiliated American Academy and National Institute of Arts and Letters . . .

To *Gordon S. Brown, '31,* an honorary doctorate of engineering, by Purdue University . . . to *Donald A. Rice, '32,* the Colbert Medal "for his important contributions to the Department of Defense," by the Society of American Military Engineers . . .

To *R. B. Woodward, '36,* the Theodore William Richards Medal, by the American Chemical Society . . . to *Elias Burstein, '43,* the Basic Science Award "for his pioneering work using infrared radiation to investigate the fundamental properties of semiconductors," by the Naval Research Laboratory Branch, Scientific Research Society of America . . .

To *Bruce P. Bogert, '44,* the Biennial Award for his "substantial contributions," by the Acoustical Society of America . . . to *William D. Kingery, '48,* the John Jeppson Medal for "distinguished service," by the American Ceramic Society . . .

To *Walter J. K. Tannenberg, '52,* and *Jerome D. Waye, '54,* honors for "diligent work and qualities serving to designate a good physician," by the Massachusetts Medical Society.

Creole Foundation Grant

■ Announcement was made in the spring by J. A. Stratton, '23, Acting President, that the Institute had received a grant of $30,000 from the Creole Foundation of Caracas, Venezuela, to aid M.I.T.'s program of research and education in soil engineering.

The grant is the first the Creole Foundation has made in New England and the largest it has ever given to an educational institution in the United States. The money will be used to expand facilities in the M.I.T. soil engineering laboratories in the Department of Civil and Sanitary Engineering.

Soil engineering deals with the fundamental properties of soils and with ways of improving them for engineering purposes. It ranges from foundation studies for buildings and bridges to research on highway and airport construction, as well as on such earth structures as dams, embankments, and tunnels. The first course in soil engineering in the United States was given at M.I.T. in 1928.

Soil engineers from underdeveloped countries — some of whom are studying at M.I.T. — are particularly interested in the use of earth as a building material. In many of these countries, soil is not only the most economical but also the only available construction material.

More than 125 Latin American students, including 16 from Venezuela, are currently enrolled at M.I.T. Several of these students are doing pioneering research on new ways of using soil in engineering projects in their homelands.

The Creole Foundation was organized in 1956 by the Creole Petroleum Corporation, which is a United States company operating in Venezuela and one of the world's major oil producers. The Foundation contributes to educational, scientific, and cultural progress in Venezuela and to related activities in the United States.

Lowell Institute Commencement

■ Certificates and diplomas were awarded to more than 100 students of the Lowell Institute School at graduation exercises held in Huntington Hall of M.I.T. at 8:30 P.M. on May 22.

Principal speaker at the ceremonies was Edward E. Booher, Executive Vice-president of the McGraw-Hill Book Company. He shared the platform with Professor John B. Wilbur, '26, Head of the Institute's Department of Civil and Sanitary Engineering, who spoke on behalf of M.I.T., and Ralph Lowell, trustee of the Lowell Institute School, who awarded the certificates. Professor Arthur L. Townsend, '13, Director of the School, presided.

A feature of the evening was the 13th award of the Charles Francis Park Medal to Gerald J. Bradley, the year's outstanding student. Bradley, winner of the Park Medal, attended Chelsea High School, and for the past five years has served as inspector of naval material at the Boston Naval Shipyard.

Mr. Booher, speaker at the exercises, is widely known for contributions to educational book publishing. He has been with the McGraw-Hill Book Company since 1936, is a trustee of Antioch and Pace Colleges, vice-president of the New York Academy of Public Education, and director of the American Institute of Graphic Arts and the American Textbook Publishers Institute.

In his talk before the graduates, Mr. Booher related recent experiences he had encountered this spring in a visit to Russia, and compared technical education in the Soviet Union with that to be found in the United States. He also paid special tribute to Professor Townsend, who received the 8th annual James H. McGraw Award in Technical Institute Education a year ago.

In recognizing and congratulating the graduates on achieving a worth-while program of study under the difficult circumstances of going to classes several evenings a week after completing a full day's work, Professor Wilbur made a strong plea for strengthening engineering education. Said Professor Wilbur:

> The engineer must, of a certainty, have a firm grounding in science; but in professional practice, such knowledge is but a springboard for most of the situations he will encounter. He must operate in areas that are in part above and beyond the well-documented but relatively limited areas of systematized knowledge. Perhaps the principal function of the truly professional engineer is to harmonize and relate the conflicting forces and tendencies that – unlike the situations encountered in pure science – are bound to be present when one attempts to apply science to the welfare of society. Such a process of harmonizing and relating is not a science, but is an art in the highest sense; and if this art should be crowded out by science to the point where it is virtually nonexistent, then the very essence of professionalism in engineering would likewise be lost in the bargain.

The Lowell Institute School, conducted under auspices of the Institute, gives two-year, tuition-free curricula in the fundamentals of mechanical, electrical, and structural engineering, and a number of single subjects in other technical fields.

Grant for Chair in Physical Science

■ Precedent-setting grants totaling $2,500,000 for professorial endowments at five eastern universities – Harvard, Yale, Princeton, the University of Pennsylvania, and the Institute – were announced on May 22 by the Donner Foundation of Philadelphia, one of the country's largest philanthropic foundations.

Announcement of the grants, amounting to $500,000 to each of the five educational institutions and payable over a five-year period, was made by Robert A. Maes, Executive Vice-president of the Donner Foundation. The money is to be used to endow a Donner Chair of Science at each of the universities. Income from the grants will provide a yearly salary to the person selected to fill the position created at each of the universities.

The Donner Chairs will be among the nation's most highly endowed university chairs, and this grant represents one of the few occasions when foundation funds have been awarded for endowed chairs, rather than for buildings, equipment, scholarships, or projects. In making the grant, Mr. Maes said:

> The Donner Foundation considered this step for some time before acting on the grants. In an age when scientific education is of utmost importance, the board of directors of the Foundation felt that this would be the wisest course of action.
>
> The Foundation hopes that these will be the forerunner of similar grants by other individuals and organizations interested in maintaining and improving the economic status of the teaching profession.

In accepting the grant on behalf of M.I.T., J. A. Stratton, '23, Acting President, said:

> The destiny of civilization may well rest upon the future creativeness of science and technology. Scientists and engineers have already achieved the physical means to conquer space, new ways of preventing and healing diseases, new tools for a longer and more comfortable life, as well as a host of other accomplishments. Yet we as a nation have failed, as President Eisenhower has said, "to give high priority enough to science education and to the place of science in our national life."
>
> It is for this reason that I particularly welcome the generous action by the Donner Foundation, establishing an endowed professorship in the physical sciences to be known as the Donner Chair of Science. . . .

The Donner Foundation was founded in 1932 by the late William H. Donner, President of the Donner Steel Company of Buffalo, N. Y., until its sale to Republic Steel Corporation in 1929, in memory of his son, Joseph, who died of cancer on November 8, 1929, at the age of 35. Named the International Cancer Research Foundation first, the organization was renamed the Donner Foundation in 1945.

Since 1949, the Donner Foundation has channeled the majority of its grants into three fields – awards to recognized and reputable groups or institutions for research on the cause of and cure for the less understood illnesses and diseases, a scholarship program in aid of secondary education, and support of projects designed to preserve the American way of life. From its inception to date, the Foundation has granted awards totaling almost $6,250,000.

Twenty-five Years Ago This Month . . .

■ On July 1, 1933, Dr. Allan Winter Rowe, '01, Chief of Research Service of the Evans Memorial of the Massachusetts Memorial Hospitals, retired as the 39th President of the Alumni Association, being succeeded in that office by Redfield Proctor, '02, President of the Vermont Marble Company, a Life Member of the Institute Corporation, and in 1923–1925, Governor of the State of Vermont.

Other retiring officers of the Rowe Administration of 1932–1933 were: W. Malcolm Corse, '99, as Vice-president; William H. Coburn, '11, and Harold S. Wilkins, '14, as members of the Executive Committee. Their respective successors in the Proctor Administration of 1933–1934 became: Edward L. Moreland, '07, Grosvenor D. Marcy, '05, and Charles E. Smith, '00.

[Two of the above-named subsequently served as Presidents of the Alumni Association, namely: Smith, 41st President in 1934–1935, and Moreland, 42d in 1935–1936.]

. . . William S. Forbes, '93, Lammot du Pont, '01, and Frank B. Jewett, '03, retired as Alumni Term Members of the Institute Corporation, being succeeded by Allan Winter Rowe, '01, Louis S. Cates, '02, and H. B. Richmond, '14.

[Later, four of the above-named were elected Life Members of the Corporation, namely: Du Pont and Jewett in 1934, Cates in 1943, and Richmond in 1952.]

. . . Nine long-time members of the Faculty, whose combined length of service to M.I.T. totaled 352 years, retired on June 30, 1933. Two of these were Heads of Departments: David R. Dewey and Waldemar Lindgren, respectively, of Economics and Geology. Six were Professors: Robert P. Bigelow, of Zoology and Parasitology; W. Felton Brown, of Freehand Drawing; William Hovgaard, of Naval Design and Construction; William A. Johnston, '92, of Theoretical and Applied Mechanics; Ervin Kenison, '93, of Drawing and Descriptive Geometry; and John O. Sumner, of Architectural History. The ninth was C. Howard Walker, '99, Special Lecturer on the Philosophy of Architecture and the History of Renaissance Art.

Redfield Proctor, '02, former Governor of the state of Vermont, from a photograph made at the time he took office on July 1, 1933, as the 40th President of the Alumni Association.

■ In July, 1933, three undergraduate dormitories of the original group opened in 1917 – Crafts, Nichols, and Holman, situated behind the President's House – were being converted to become the Institute's first Graduate House, which would "accommodate 90 students, or approximately one-fifth of the entire Graduate School. . . . A number of rooms," continued the announcement, "have fireplaces, and all will be completely furnished, including attractive rugs and draperies. They will have complete porter service, and an interconnecting telephone service will add to the facilities for communication." The appointment of Avery A. Ashdown, '24, instructor in the Department of Chemistry, "as Faculty master of the Graduate House was also announced."

Slide Rules and Paperbacks

■ Reports covering the year's activities of the M.I.T. Alumni Association provided the major fare for the 332d meeting of this body which gathered at the Faculty Club on the evening of May 26. After dinner, attended by 137 members and guests, Gilbert M. Roddy, '31, President of the Association, opened the meeting by calling for the Secretary's report.

Association Secretary Donald P. Severance, '38, reported changes in class affiliation for three recent graduates, and that 13 members of the Institute's staff visited 14 M.I.T. clubs across the country between May 1 and May 26. Also reported was the action of the Executive Committee in electing the following officers of the Association to serve for an additional year: H. E. Lobdell, '17, as Executive Vice-president; Donald P. Severance, '38, as Secretary-Treasurer; and Miss Madeline R. McCormick, as Assistant Treasurer.

A budget of almost $95,000 for 1958–1959 operations of the Association was reported as having been approved by the Executive Committee, which also voted to return to the Alumni Fund an unexpended portion of last year's budget. The Executive Committee approved recommendations of the Alumni Fund Board that $100,000 be appropriated to provide for Alumni Fund National Scholarships for members of the Class of 1962, to be made available in amounts not exceeding $25,000 per year for the period 1958–1962, and that $15,000 be appropriated to provide for the Alumni Fund Scholarships during 1958–1959 for members of the Class of 1960 who have received Alumni Fund Scholarships during the current academic year.

For the Committee on Honorary Members, Leicester F. Hamilton, '14, reported that Miss Madeline R. McCormick had been unanimously nominated for honorary membership in the Alumni Association. Miss McCormick has been employed on M.I.T. Alumni matters at the Institute for 39 years, and since 1950 has been assistant treasurer of the Alumni Association. Through her many years of continuous devoted service and loyalty to the Institute and its Alumni, she has become known to an extraordinary number of M.I.T. Alumni all over the world. Professor Hamilton's report was received with enthusiasm.

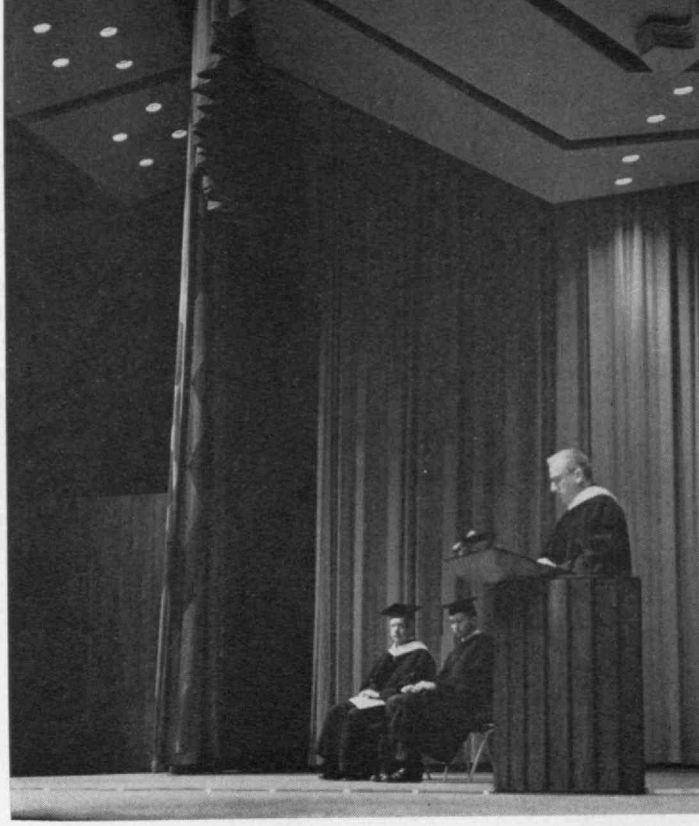
(*Concluded on page 534*)

Zest for Living

To one who has genuine curiosity and interest in the world and its people, the world ever has interest

BACCALAUREATE ADDRESS

by HAROLD L. HAZEN



Participants in the baccalaureate service were, in usual order: Chancellor J. A. Stratton, '23, R. E. Jordan, 3d, President of Class of 1958; and Dean H. L. Hazen, '24.

As I observe friends, acquaintances, and other people, one of the ways in which they differ among themselves is in their fundamental enthusiasm for life. For some, passive preoccupation with life's little labors and time-fillers hopefully evades boredom. For others, life is a privileged experience, full of interest, indeed fascinating in the power of its appeal. This difference in attitude toward life seems important to me, worth examination and thoughtful consideration. We may characterize this difference in attitude as the absence or the presence of a quality we may call "zest for living."

Zest for living, it seems to me, is important for very personal and selfish reasons. Habitual devotion to the routine and familiar trivialities of life gives only small satisfactions. If over the years we grow to see the world as a dull place, lacking interest, and failing to arouse our enthusiasm, we stagnate, then wither, even though we remain alive physically. Apathy toward life, or worse, lack of awareness of life and the world about us, if not actually criminal is at least a pitiable waste of great opportunities.

On the other hand, the phrase "zest for living" brings to mind the image of a buoyant spirit, a person enjoying life, one who finds it exciting, one for whom the days are always too short. For him life and living are adventure, an exhilarating experience, of which there is never enough. He finds life good.

But zest for living has more than selfish significance. Among the forces that move man to accomplishment, zest for living is important. What that inner emotional force is that makes men think, work, and act to constructive ends is elusive. It is buried deep within us, but somewhere near this vital force, and rather closely associated with it, I am convinced, is the spirit that finds life good, that finds satisfaction in productivity, and that generates buoyancy from active participation in the life and thought about it. It is an important force in human life.

Many influences affect zest for living. Strangely enough, physical infirmities do not necessarily destroy or prevent zest for living. Inspiring and challenging to us all are examples, of which Helen Keller is perhaps the most spectacular, of people with major handicaps who nevertheless have achieved great zest for living. Age and the aging process have some correlation with it, but with notable exceptions. Youth with its natural buoyancy tends to have this zest in generous measure, yet youth alone is not enough. We all know of the depths to which adolescent depression can descend, and how the normal vigor of the early years of maturity sometimes lack motivation. On the whole, however, the sheer physical energy and vitality of youth tend toward an optimistic and positive outlook on life that readily surmounts obstacles that appear formidable to older people.

It is in later years when the unbounded energy of youth develops obvious limits that the differences among individuals in their zest for living begin to show more clearly. Middle age tends to be a turning point in this regard. There are those whose habit patterns become established in a circumscribed routine and for whom change ceases to occur, in response to environment, or in ideas and outlook. A static state of the mind and spirit seems to set in. Others, however, on reaching this middle period of life somehow succeed in maintaining the zest for living with no impairment. A person of 80 who has maintained this zest is an inspiration to everyone.

For you of the graduating class these years of middle and later life seem a long way off, and you feel little concern for them now. Yet the pattern of

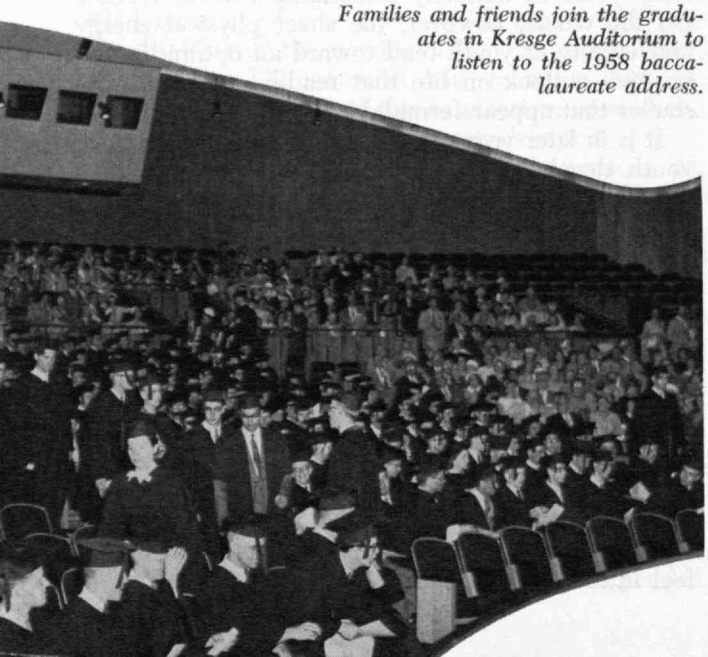
life you establish in the next few years will influence significantly your success in building and maintaining an enduring zest for living.

How can we go about cultivating this quality, and how keep it alive as we grow older? This is a question that is particularly pertinent for you at this time. As students you have been guided and to a considerable extent paced in your intellectual activities. True, there is a wide variation in the response that each of you makes to the challenges that you meet in college. You may feel that during your college years there has been precious little opportunity for development of the ebullient outgoing spirit.

But I hope that among the hours of hard work, you have experienced memorable moments of insight and inspiration. For example, in your study of mathematics you may have experienced the thrill of suddenly perceiving the power implicit in the elementary notions of the calculus. To see a vast new area of previously unattainable intellectual territory suddenly opened up with liberating new concepts can be an important emotional experience.

I hope that also in your reading and study, and your discussion of human ideas and institutions you may have experienced episodes of inspiration. Perhaps Fifth Century Athens showed you developments of the human mind that you found thrilling, or the Middle Ages emerging into the Renaissance as expressed by a great Gothic cathedral showed you heights of the human spirit to which you could react with warmth. Perhaps you have discovered Bach, Beethoven, or Bartók. In the scientific field, the elegance and beauty of Newton's great concept of gravitation, or Maxwell's marvelous generalization of the electromagnetic field may have given you new insights of mind and spirit, new sensitivity to the excitement that can lie in ideas and intellectual experiences.

I also hope that at M.I.T. you will have experienced deep and abiding satisfactions from association with the spirit and outlook of one or two professors who have given you a key to a deeper and more powerful understanding. If you have found even one teacher who helped you to discover a point of view, a method of thought, a courage to attack new and unfamiliar situations with confidence, and above all, one who inspired in you a sense of adventure and excitement in the life of the mind, you have received the most valuable benefit this institution can give.



Families and friends join the graduates in Kresge Auditorium to listen to the 1958 baccalaureate address.

You are about to graduate now. From this time on, unless you continue further in the academic world, you will make something of a change in course, in the navigator's sense. At the Institute, the pace, the task, and to some degree the pattern of life have been determined for you. As you go out to begin your professional career, the setting of pace, and especially of the pattern of life in mind and spirit, become much more your responsibility. You will, in much greater measure than heretofore, determine what is important to you. Consciously or unconsciously you will set values on the various alternative uses of your time and the uses of your physical and mental energy. What are you going to consider the more important, what the less important uses? To what kinds of experience will you look for the most enduring satisfactions?

We can illuminate these questions in terms of the negative. There is the tragedy of boredom. The waste of good resources of mind and spirit through boredom is bad enough, quite apart from the resultant unhappiness. Fortunately, I think this phenomenon of boredom is fairly rare among Tech men and women. Perhaps more insidious is the phenomenon of half living, of being comfortable in a passive sort of way, but of missing live, interesting ideas and activities, of living a bit too much like a healthy vegetable.

At the positive end of the scale I would put zest for living. Many of those who have graduated here before you have achieved and are continuing to achieve a remarkable degree of zest for living. Many others achieve it to a modest degree or perhaps only over somewhat restricted segments of their activity only.

What are some of the ways in which Tech graduates achieve zest for living, and in contrast, what are ways in which they may tend unfortunately to circumscribe or limit the areas in which they achieve this buoyant and sustaining spirit?

In their professional field our graduates, in common with most professional people, by and large achieve notable zest for living. In the first place, the M.I.T. man has at least good professional competence. He practices his profession, knowing that he is doing an intelligent and competent job. This job is normally one that contributes to satisfying some legitimate and often important human need. It is a worthwhile job; he produces a constructive result. He finds satisfaction in such a job, and this in turn normally produces enthusiasm and verve. This is a sort of minimum attainment for our graduates.

Among those with more outstanding abilities and ambitions are those who produce outstanding contributions – new discoveries, new products, new structures of beauty, new insights into the world about us. Such individuals often seem to have an unusual zest for life. Whether this be cause or effect, or an interaction between the two is less clear. But he who is notably creative and productive in his own field

often seems to have a zest for life that extends out and beyond his professional field. In a recent radio broadcast, Harlow Shapley, the famous astronomer and a member of the M.I.T. Corporation, when asked about his various areas of interest outside astronomy lightly characterized himself as scatterbrained. He illustrated by describing some of his studies on the traveling habits of ants. He started these out of idle curiosity at Mt. Wilson Observatory during the daylight hours, while he waited impatiently for darkness to permit him to get on with his astronomical observations. This was at the time when he was making observations for his now world-famous work on variable stars. I cite this as an illustration of the breadth of interest of many of our most creative people.

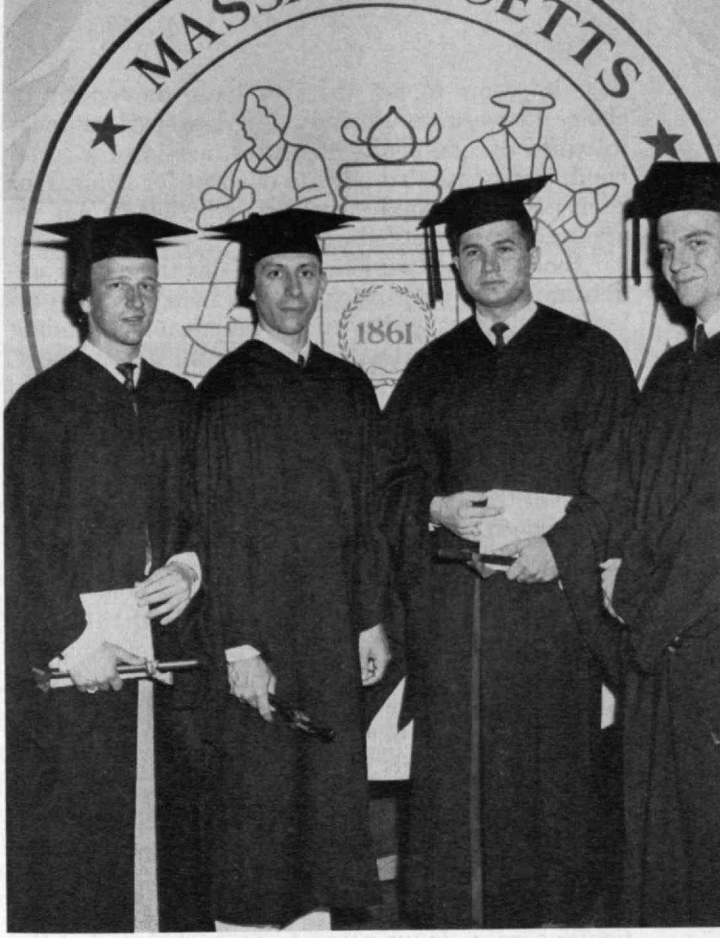
In our home and family life we Tech people appear to be at least as successful and probably more so than the average citizen of our country. Home and family are institutions based upon very fundamental human needs, instincts, and urges. We would expect that our group would go about building them on sound foundations in a reasonably intelligent sort of way.

It is when we begin looking into our relations with the community, with the world about us, with activities that concern people rather than things – with ideas, human understanding and values – that the scientific and technical fraternity must struggle more vigorously to achieve zest for living. We seem by nature to be less interested in, indeed less sympathetic toward, those areas of human activity that lack the responsiveness to the hard logic characteristic of the orderly and dependable physical phenomena of our chosen field.

The social or political question that has no single right answer, indeed too often no apparent answer at all, bothers us. We physical scientists are not accustomed to accepting this sort of situation without a sense of frustration and defeat. We expect our problems to have answers, and answers that experimental study, intelligent analysis, and good hard work will make clear to us. Some of the great problems in the social scene, such as segregation for example, seem too amorphous to resolve, too involved to cope with; they contain too many irrational elements not amenable to analysis and straightforward solution. Nevertheless we must, if we are to be honest and responsible, recognize these problems as real, legitimate, and demanding serious effort, even though no answer can be seen. After all, the absence of an apparent answer will seldom stop us in our professional work.

The political world of today contains so many trouble spots, so many great and fundamental conflicts in outlook and ideology, such threats, indeed to our very existence, that our instinctive reaction may tend to be indifference, if not hopelessness and frustration. The tools of our profession, clear logical analysis, experiment, rational design, too often seem to have little relevance to the great problems that face us today in the world of politics.

What then will be our response to these great social and political questions? It depends very largely on us, on our attitude, on how we elect to view these problems. We can elect to view the world today with



Officers of the Class of 1958, in reading order, are: H. G. Johnson, West Hartford, Conn., Secretary-Treasurer; H. R. Warner, Kent, Ohio, Vice-president; R. E. Jordan, 3d, South Boston, Va., President; and W. H. Austin, Jr., Rome, Ga., Senior Marshal.

pessimism, a sense of futility, fatalism, or mere apathy. We can react with uneasiness, with a primitive fear of the unknown, with a sense of defeatism before forces beyond our knowledge and control. We can regard ourselves as unwilling victims watching the mortal contest of the political giants whose struggles threaten to carry all of us down together into oblivion. This view presents a stark and dismal picture to which we can reconcile ourselves only by ignoring it or by putting it out of mind as much as possible. This is the ostrich solution.

But we can elect a quite different outlook. We can see in these events one of the great epic dramas of history enacted before our very eyes, day by day, unfolding with unprecedented speed, intensity, and scale, and reported almost instantly in great detail as it happens. There is, however, an inescapable price of admission for those who would witness today's events as great epic drama. This drama is complex, unbelievably complex; it has many actors; its plot is extremely involved and extends backward from the present ultimately beyond the limits of the recorded history. To see today's events therefore as a continuing drama requires knowledge and understanding, both of the contemporary scene and of the background from which it has evolved. The greater our knowledge and understanding of the earlier acts of this drama, the more we know about the cast of actors, the greater will be our appreciation of it. With understanding and perception of today's events, we can feel glad to be alive in such exciting times. Here

then it seems to me that we have the power of choice between an unhappy and depressed response to world events on the one hand, and on the other hand, a response that adds to our zest for living. Our choice is determined largely by whether or not we attain some understanding.

I should like to explore further this thought of understanding as a basis for zest for living. In the professional field, as we have noted before, understanding is taken for granted as a condition for achievement, and of the spiritual rewards of achievement. But so I believe that understanding is also an important great, indeed essential, element in achieving zest for living in areas outside the professional field.

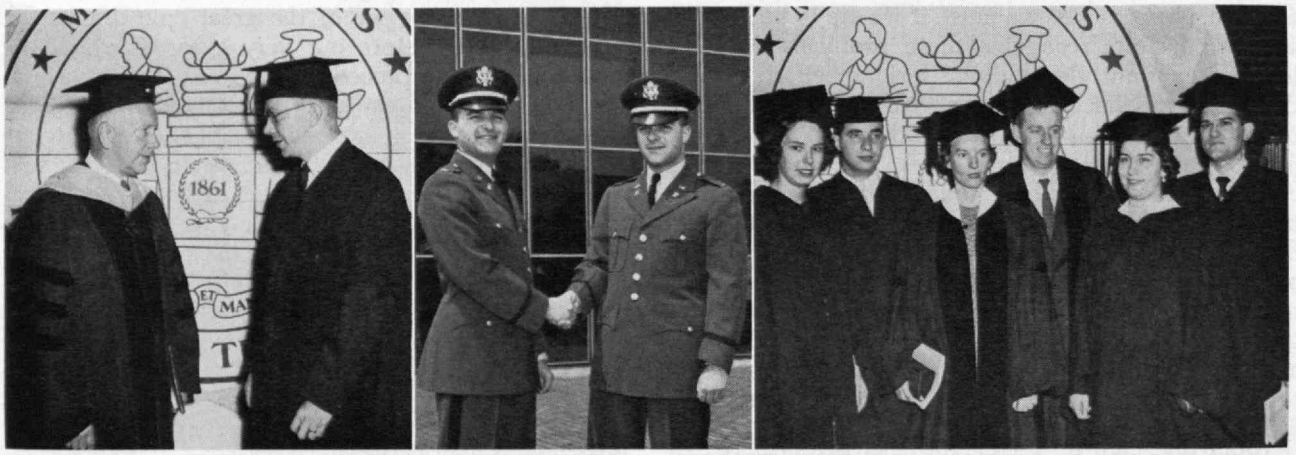
One of the men who opened a number of doors to me in youth, an unusually intelligent minister of the gospel in a small Midwestern town, suggested as a worthy goal in life the mastery of one field to the point of professional competence and authority, and the development throughout the range of non-professional fields of such acquaintance as to be able to listen and to inquire with some perception and understanding. I have long found satisfaction in this dual goal. Both of its phases have contributed to my zest for living, each in its appropriate way. May I suggest a few random examples of contributions that wide-ranging curiosity and inquiry can make.

First, in the realm of the physical world where most of us find our professional home in some particular corner, do we pause to see and marvel at the beauty of the atom, at the absolute order and dependability of the physical world, at the awesome grandeur of the universe? In science we are living at a thrilling time. Our image of the physical universe has been developed both in great scope and fine detail. Our understanding is growing at a tremendous rate. Right now, at the small end of the size scale, the particles of which the atomic nucleus is composed are the subject of feverish study and speculation, and of experiment by some of our most brilliant minds. These particles are extremely small and difficult to study. The ingenuity and mental power brought to bear in discovering their nature merit, it seems to me, the same order of respect and reverence that we accord to the work of the greatest artist or philosopher.

At the other end of the size scale is the vastness of the presently observable universe. Is it not remarkable that the astrophysicist studying its farthest reaches uses the same nuclear and atomic physics as do those scientists working with the smallest particles! One of the marvels is the range of the sizes in the universe. Thus the diameter of the now-known universe is about as much larger than a 100-mile distance as a 100-mile distance is larger than the diameter of the proton. The sweep of these dimensions is beyond our comprehension. Yet throughout, from the minute to the immense, we see law and order; we see elegance and majesty of design that beget wonder and profound humility, yet also a pride at being a part of it all. To have some elementary comprehension of our physical world as our scientists now see it is to find an intellectual excitement of the first order.

Let us glance for a moment now at another field, the great field of life as seen by the biologist. Here we also find that a remarkable richness of understanding has been achieved, which however but serves to identify some of the tantalizing puzzles yet to be solved. In the world of life also we have a tremendouse size scale, from the most minute virus molecule capable of self-reproduction and thus identifiable as life, through a vast world of unicellular organisms up to the most complex organism of all, man himself. The biologist is feverishly studying the cell because he feels tantalizingly close to understanding its basic structure and operation. In genetics, the science of heredity, he can almost see the relation between chemical molecular structure and the magic pattern by which a species is reproduced in kind through countless generations, and in the case of some of the minute unicellular organisms, reproduced without discernible change almost since life began on this planet. The great phenomenon of photosynthesis, by which all life obtains its vital energy from the sun, is awe-inspiring. The layman who will take the time to examine with a microscope, and un-

(*Continued on page 506*)



(Left) *Chancellor J. A. Stratton, '23, chats with William D. Couper who received two S.B. degrees and one S.M. degree at commencement exercises.* (Center) *Twins Richard M. Gottlieb* (left) *and Michael M. Gottlieb received their R.O.T.C. commissions and bachelor's degrees this June.* (Right) *This year's graduates included three married couples, each spouse of whom received a degree They are: Mr. and Mrs. Alvin W. Drake, Mr. and Mrs. Alexander MacLachlan, and Mr. and Mrs. Nicholas A. Spinelli.*

Obligations of the Scientist

Society needs the venturesome instinct, the willingness to dissent, the refusal to conform while serving his fellow men, which characterizes those trained in scientific disciplines

COMMENCEMENT ADDRESS **by JOHN J. McCLOY**

From a number of points of view this occasion places a heavy burden on the speaker – certainly on this speaker.

In the first place, a commencement audience always poses a disconcerting challenge. There is the inescapable and unnerving expectation that one who speaks to such an audience will sound some stirring note fittingly to mark the end of a course well run, and just as fittingly to set the runners resolutely off on another.

Then again, there is the setting. The mere name of this institution has always awed me. My education was also attempted in this general area of the country, but always, in my mind, M.I.T. stood for something ominously mathematical and difficult. As one whose engineering skill was completely exhausted by the perversities of a pulley problem, I have never failed to wonder how anyone ever got through here. I mean no disrespect when I say to you today, "However in the world did so many of you, who appear from here to be of no more than normal intelligence, manage to slide by?"

And then there is the time. We are in a great scientific revolution, perhaps the most startling and perhaps the most crucial of all times. Never has man lived before, as Eiseley puts it, "in so great an age of exterior accomplishments, so tremendous a projection of himself into his machines . . ." when the world is athirst for engineers and technologists – when man has just been handed by the scientists a product capable of destroying his world – and when the world still gives strong evidence of being quite capable of indulging in the delusions and stupidities which could bring that destruction down upon us.

Finally, there is the audience itself, for which I can think of no better designation than "elite."

I think you must agree then that it is difficult to do justice to such an occasion, particularly when the speaker himself ponders the future, and is so perplexed by the crosscurrents of our times. Undaunted, however, I will talk briefly about some of the major challenges which crowd this Commencement Day, and endeavor to find some responses that would help to meet them.

I suppose we could agree that our primary, if not our total, challenge is the existence of weapons capable of our complete or near-complete destruction. The world is today groping with the practical, the moral, and the philosophical implications of this reality.

Next, there is the rapid emergence of Russia as an impelling, revolutionary, and all-pervading force in our greatly foreshortened world. I have never ceased to marvel at the prescience of de Tocqueville when, over 100 years ago, he saw so clearly the future of the United States and Russia. The passage has been frequently quoted and by this time is so familiar that I shall only repeat the last sentence of it: "Their points of departure are different, they follow different paths. Nonetheless, each of them (Russia and the United States) seems intended through some secret design of Providence to hold in its hands the destinies of half the world."

The third great challenge is the restlessness surging through the underdeveloped races and peoples of the world, which induces an entirely new relationship between them and the so-called developed countries, between the white and the colored, between the advanced and the primitive. Thus, we face a scientific challenge, a political challenge, and a social challenge – each of imposing proportions. But in this shrunken world and in the compression of our time, these challenges are fused and confront us daily inseparably.

Other trends or phenomena might well be singled out in a list of the great issues that face us, but these that I have mentioned, like Mercutio's wound, will serve.

So massive and so exacting are these challenges, and so often do we seem to fall short of meeting them, that one is led to question whether our political and governmental systems are flexible and efficient enough to cope with these new world forces. For those engaged in our public affairs, the calls upon their energy, patience, and nerves – exasperating as these are in the obstacle course of the democratic process at home – are geometrically multiplied by the necessity of attaining a concert of action with our allies, who, in greater or lesser extent, endure with us the checks and balances, the traps and hurdles, and the vagaries of democratic processes. Yet to lose those processes is to abandon the field.

We cannot, of course, continue to be smug or uninventive about our habits of government or our bureaucracy. The French scene is today a sufficient example, if we should seek one, of the serious dangers implicit in governmental ineptitude. There is much of administrative and bureaucratic underbrush that will have to be cut away if we are to find a clear path of security and progress. But I suggest

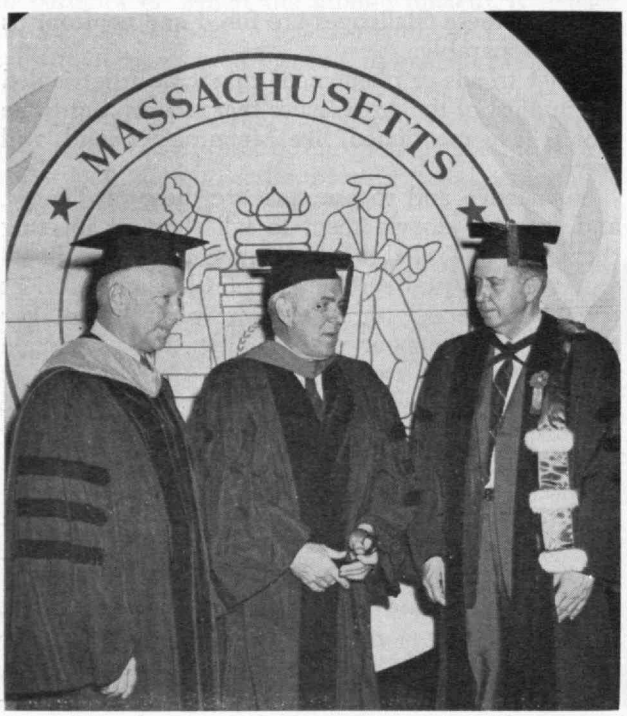
that our fundamental democratic forms, awkward as they may be at times, are adequate to the task and indispensable to the goals we seek.

The vital need does not lie in changes of structure or administrative machinery. The need is for men and thought – the best that can be found and produced in this richly endowed nation.

We must be braced for the unequaled tests of spirit, talent, and wisdom that lie ahead. The business of government has become the most complex, the most difficult, the most abstruse, and at the same time, the most pervasive influence in our lives. Under these circumstances, is not the obligation bearing upon you, a true elite, quite clear?

I read a speech which Professor Carlo Schmid of the Johann Wolfgang Goethe University of Frankfurt and a Vice-president of the Bundestag gave in Hamburg recently. He was attempting to state the lessons to be drawn from the failure of the elite of Germany to respond to the challenge of Hitler. As a scientist, he was attempting to define the obligation bearing upon the intellectual to participate and to proffer solutions in governmental affairs. There was an obvious default in Germany on the part of the elite to involve themselves during the Nazi era. This was a period of unaccepted challenge, but serious as that challenge was, are we not now faced in these United States with one wholly different in nature yet quite as crucial?

"The state," said Schmid, "must be placed under the vigilance of the intellect, and who should be responsible for this other than just those people whose task it is to influence things with their minds?" He went on to say that the intellectual elite is useless when it places itself outside or above the community, and that the intellectual mistakes greatly if he considers that his superior intellect gives him the right to feel superior; rather it should give him humility to serve, "to bow down towards the earth – this earth on which the ruins lie and the weeds grow."



Acting President J. A. Stratton, '23, John J. McCloy, commencement speaker, and President James R. Killian, Jr., '26, photographed at robing ceremonies prior to commencement exercises.

Here then lies your duty. But what of your qualifications to discharge it? Are you equipped to carry the unmatched responsibilities that might and should be placed in your hands? It is in some recognition of this obligation that your Institute, since the time of Aydelotte, has so sharply increased the weight of its curriculum on the humanities side.

But it is well to remind you that this growing concern with the humanities, with ethics, with society in the world of the scientist is not the mere addition of new seasoning to an old recipe. It is rather a recognition and renewal of what is inherent and fundamental in the scientific spirit itself. For the search of the true scientist is for meaning, for cohesion, for unity, as he finds his way through a labyrinth of seeming disorder and disconnected observations. The spirit of science is to set men free – free of superstitions, of chains, of slogans, and of dogma.

If, then, you are a true man of science, if you are a graduate of M.I.T., then you should be admirably equipped to take up the challenge of the times – to become involved on this earth.

Robert Lovett, with whom I have had many missions in common during the war and afterwards, called my attention the other day to a talk given by Merle Tuve, of the Carnegie Institution, which dealt most eloquently with the liberalizing influence of science. It impressed both him and me so much as an interpretation of the spirit of science that I should like to repeat it to this audience:

> The beauty and simplicity of the laws of nature which govern the world in which we find ourselves, the fantastic range today of man's ideas and studies and measurements, from the countless galaxies in the distant reaches of outer space far beyond the faintest stars of our own Milky Way, down to the structures inside the atomic nucleus, this is vision enough to humble the most arrogant. The chemical forces that build molecules and crystals, the beautiful simplicities of genetics, the astonishing patterns of life, from protein synthesis to instinct and behavior – these are the new materials for the artist to comprehend and use. The poetically beautiful patterns of modern scientific knowledge bear fresh witness in a whole new range of thoughts and qualities and dimensions to the psalmist's ancient cry –
>
> "The heavens declare the glory of God and the firmament showeth His handiwork."

He goes on to say this is the spirit of science. It is not airplanes, Salk vaccine, or anticoagulants for heart patients. These are technological developments flowing from the content of science.

But do not allow the eloquence of this passage to blind you to the fact that the spirit thus engendered is only the base upon which you have to build. Merely because you are a scientist you do not thus become qualified to propound solutions to the world's political and social problems. You have to do more than sign an intermittent manifesto from the isolation of your laboratory demanding of the government some immediate course of action. It requires

As Dean C. Richard Soderberg, '20, calls out their names, graduates in the School of Engineering receive their M.I.T. degrees.

added knowledge, added reading, added thinking, and added experience, all inspired by the scientific spirit. It requires dealing, incidentally, with subjects wherein the variables are apt to be far more numerous and baffling than in any scientific problems you have thus far encountered.

I can recall that just after the first Sputnik went up, when so much emphasis was being placed on the need for experts, President Eisenhower, in the midst of all his problems, said that he would gladly trade a dozen of the finest engineers and scientists, precious and rare as they were, for just one thoroughly reliable moral philosopher. What is the right thing to do may be more important to determine than the means by which it is to be done. I wonder if this cry in the wilderness of our perplexities is not a reflection of the need for a broad appreciation of the humanities, lest the pursuit of the means obscure the verities. The truly great scientist has always been more than a technician. The mark of his greatness is his breadth of vision and his ability to interrelate his work and the society around him. I need only mention such names as Aristotle, da Vinci, Newton, and Einstein. In fact, it is difficult to find any real genius who was limited to a specialized compartment.

A short time ago I spoke at the Washington and Lee University Law School on what I called the role of "The Extra-Curricular Lawyer." Primarily I had in mind the lawyer's role in government and in business, not in connection with his regular profession, but as he from time to time stepped out of that profession to play a part in a wholly different field. In this connection I did a little research to determine how many lawyers there were who had made contributions in government and in business, and I suppose it would not be surprising to you if I said there were far more lawyers than scientists who became congressmen, senators, governors, cabinet members, and diplomats, as well as heads of large corporations. Although there are certain attributes the lawyer has, good or bad, which seem to gravitate him toward public service, it is comparatively rare to find scientists in government as such, as distinguished from their attachment to government as technicians or scientific advisers. Yet the scientist might well contribute as much or more than the lawyer has to our public life. In trying to analyze the lawyer's contribution, I referred to a comment of Mr. Justice Frankfurter's which in effect suggested that the lawyer's chief contribution or qualification lies in what he called his expertness in the "art of relevancy." I would suggest the precious quality which the scientist can offer to his community and to his society is the habit of integrity which derives from the scientific approach. Certainly, at least as much as the lawyer, the scientist is concerned with the search for truth. He wants no preconception, no prohibitions, no prejudices to blur his vision or to divert his search. Society needs his doubts and his venturesome instinct, his willingness to dissent, and his refusal to conform. It needs them not only in the confines of his laboratory or university or his own company plant or research center, but also in the broad area of political, social, and economic action. It used to be said that politics and science do not mix, but with the implements that science has given mankind, from Galileo's optics to the Manhattan project, they have had to mix. Each, as it came along, has plunged science deeper into politics and politics deeper into science. Think for a moment of what tremendous human and social implications are necessarily involved in the exciting new fields of biochemistry. Somehow when it is suggested that these interests do not mix, I am reminded of Thomas Carlyle's remark when it was reported to him that the very vigorous and animated critic, Margaret Fuller, had finally declared that she accepted the Universe. "Gad, she'd better," said Carlyle. And so, the imperative that I would place on the man of science, or technologist if you will, is an appreciation of the global character of his work. By this, I mean a sense of collaboration and relationship with other people, the people not only in his own community and his own nation, but people of other nations, other races — an appreciation of their needs, aspirations, and sensitivities.

Now that we have you involved in the outer space of world affairs, perhaps one of the first things we ought to do is to take stock of our position in the world. We appear to be in a period when much of the world dislikes us, or at least acts and speaks as if it did. To find the proper response or counter to this attitude may well be a field for the calm, objective, and penetrating analysis of the scientist to explore.

Depressing Array of Headlines

Just a short time ago I had an experience which I am sure I shared in common with most of you. I read the first page of the morning newspaper and it was packed with the most depressing array of headlines – Vice-president Nixon and Mrs. Nixon stoned and spat upon in Caracas; Beirut crowds burning American libraries; Tokyo riots stimulated by anti-American attitudes; Algiers in revolt with crowds destroying American property – unrelievedly unpleasant reading. Crowded off the front page by all this news was an article condemning American betrayal of liberal principles because we were not supporting the anti-Communists of Sumatra, while another from Jakarta charged us with offending liberalism because we were. A day or two later, the 3,000-pound Sputnik III was in orbit with Khrushchev calling ours an orange. On the same page was the Khrushchev-Nasser communiqué, ominous and threatening, in respect of an area of deep concern to the West. And, as if we did not have enough in the way of disapproval or criticism of our actions, there was Ambassador Merchant's testimony in regard to good neighbor Canada's widespread irritation at us and our tendency to take her somewhat for granted. "Et tu, Canade?" I felt like saying, but maybe I should have expected even this.

Indeed, we are blamed for so many things from so many quarters that it seems that a kind of rash has broken out all over the world. The criticisms, while significant of something, are certainly not marked by their consistency. I read, the other day, an article written about two years ago accusing us of outrageous behavior because by our inordinate demands we were keeping commodity prices high, while today we are being attacked from precisely the same quarter for permitting them to stay low.

I gained a little comfort from the fact that shortly after I had taken a trip around the world just after the close of the war, I wrote how terrified I was by the esteem in which we were then held and the extent of the hopes which then centered about us. I can remember feeling then that no nation could possibly be that representative of good in the world, and I must say that I feel now that the United States could not possibly be so influential for evil in the world as the combination of headlines, bewailing commentators, the Kremlin, and not a few of our friends presently make us out to be.

Yet, however irrational these tendencies may be, it is essential for our leaders to judge these imponderables, to appraise them fairly and find the answers, if not in terms of universal popularity, at least in terms of dependable and well-sustained national and international objectives. Moreover, it would be a matter of real significance to us and to the world if America did not continue to throw a beam of hope across the seas. I believe it was Kelvin who said there is no science without measurement, but these things defy measurement, even as many aspects of higher mathematics today transcend measurement. They require the constant application of the highest and broadest types of knowledgeability and intellect. It would be futile and naïve to search for the Eldorado of universal popularity, and foolhardy to sulk over the hurts that leadership invites. But we do need to define, and better expound than we have recently done, our long-range national objectives – objectives worthy of our genius and strength. Again the emphasis is on training and perception of the highest order, and our educational system must produce the elite of mind and character with the capacity and the sense of obligation to advance the solutions. We find Russia undergoing a veritable passion of educational endeavor based on a broad and ruthless selective process which is much more demanding than anything our educational system represents. So much more rigorous is their process that we need not worry about having plenty of room within which to tighten up our own methods before we remotely approach any threat to our liberties or egalitarian principles.

How to find the proper balance between our present system which, as John Gardner put it here last year, permits quite a few of our colleges to flourish at a democratic level somewhat below that of the good high school, and the Russian system is another challenge of our times.

Knights of Progress

It is problems such as these for which, as never before, we must look to the scientists and the engineers to give us answers, not by mere advice or prompting from the side lines, but by positive participation. The scientists are the new knights of progress. Those taking their degrees here today will be held in higher regard and be given greater opportunities than ever before, but it will mean that they now are obligated by a higher responsibility than ever before.

For example, in the vital field of technical assistance to less developed peoples, we have only begun to scratch the surface. Douglas Dillon, our Under-Secretary of State for Economic Affairs, has told us how readily and effectively the Soviet Union is able to pluck technicians out of the home environment to send them overseas to fill a gap in technical aid. We cannot match them in this, since our technicians can say no. But young men, such as yourselves, can add much to the reservoir of talent and of service in this most critical field of our international relations. If 10 per cent, or even 5 per cent, of you would determine now that you will make your contribution to this challenging program, our confidence in our future relations with the peoples of Asia, Africa, and Latin America might be immeasurably enhanced. It might mean that the steady job, social security, the flight to suburbia, and even early marriage, will

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Maintaining the Strength of U.S. Technology

Engineering has a pivotal responsibility in our total technological effort. Today's exacting demands call for more engineers nurtured in the atmosphere of research

ALUMNI DAY ADDRESS **by JAMES R. KILLIAN, JR.**

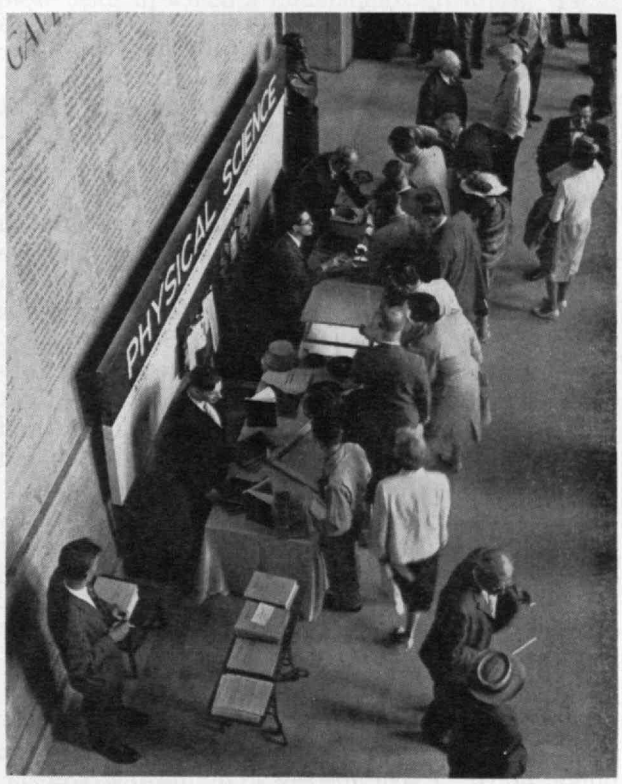
After a trip through the outer space of public life, I find this brief re-entry into the academic atmosphere comfortably smooth and free of ablation – and marked by a lump-in-the-throat reaction of delight in coming home. After so long and so uninterruptedly viewing M.I.T. intimately from the inside, I have had a revealing experience in seeing the Institute from the outside. In the perspective of distance, it does appear different; the intimate details which seemed, close-up, so important and impressive fade out, but its comely proportions become clearer and more complete. Like a great mountain seen at a distance, its true shape and size and its position in the range are perceived more clearly.

The experience of being away also enhances one's appreciation of M.I.T.'s human resources – and resourcefulness. During my absence, the members of the Institute's Administration have picked up extra burdens and carried them comfortably and well and have demonstrated clearly that the Institute's Administration has strength and depth. It also has had spirited leadership of which we can be confident and proud. As Chancellor and Acting President, Dr. [Julius A.] Stratton ['23] has turned in a tremendous performance, and we can hail him as a leader we cherish and admire. In addition, M.I.T. has again been privileged in the wise and stimulating presence of Vannevar Bush ['16], this time as Chairman of the Corporation. He has brought new wisdom and luster to our academic community. These and many others have carried extra burdens, and at the same time carried M.I.T. steadily ahead.

In view of my present assignment, you might appropriately expect of me today some observations about the current state of American science and technology and about the requirements we face for maintaining strength and progress in these fields.

Sir Winston Churchill once remarked on the importance of separating the "awkward incidents of the hour from the long swing of events." This we need to do as we appraise our national position today. We have experienced awkward events. For example, we cannot yet throw into orbit as large satellites as the Soviets, because they started to develop the technology of rocketry earlier than we. This does not mean, if we use energetically the great resources we have, that we will not match these achievements in the future or that we have fallen behind in other fields. It does mean that we face implacable, able competition in all of science and technology that will require us to strive mightily – but intelligently – if we are not to be surpassed in the protracted conflict with Communism. There can be no *foreseeable* let-down in our efforts to maintain and augment the military strength that will deter war, or in our efforts to be creative in finding *non*military ways to minimize the hazard of war. While recognizing our strength and while avoiding any spirit of defeatism, we must not deceive ourselves about the increasingly exacting demands upon our will and strength yet to be imposed by the military, economic, and ideological competition of the Soviet Bloc – a competition which will require of us, not growing comfort and leisure, but self-denial and hard work, and a recognition that intellectual achievement is as important for survival as a high standard of living and material prosperity.

"Every good and excellent thing," Thornton Wilder once said, "stands moment by moment on the razor



In its exhibit in the lobby of Building 10, the Physical Science Study Committee demonstrates how it contributes to maintaining the nation's technological strength by preparing new programs of study in high school physics.

Lectures on inertial guidance in lecture hall of the Karl Taylor Compton Laboratories outline some of the defense research work going on at the Institute.

edge of danger and must be fought for." The Free World stands moment by moment on this razor edge and must be fought for. But as we in the United States accept these stern and unremitting requirements, it is important that we not let the awkward events of the moment lead us into expedient, frenetic or ill-planned efforts, especially in research, that will not contribute to the steady growth of our strength in the long swing of events.

Let me briefly list some of the requirements and needs, both private and public, we must meet in order to make sure that our science and technology match the needs of the nation, not only in keeping it strong militarily and economically but in contributing to its intellectual and spiritual vigor.

First, as recommended by the President, we must adapt the organization and management of our military research and development to keep pace with the rapid changes in military technology. Over the past five years, I have had an exceptional opportunity to study our military technology, and the cumulative effect of this experience has been to make me an ardent advocate of the reorganizational proposals which President Eisenhower has made for the Department of Defense. It is of transcendent importance, as the President has emphasized, that our principal military objectives be clearly defined and that each of them have strong and clearly focused scientific and technical support.

Second on my list of requirements for a sound national science policy is the achievement of a greater emphasis on the qualitative aspects of our national research effort. Because research is so fatefully important to our safety and welfare and to the stability and advancement of our economy, and because our investment in it has become so great, we must be more critical in appraising its quality. Today industry, government, and nonprofit agencies expend ten billion dollars a year for research and development. Are we getting our money's worth? More importantly, is this great research effort, which may not yet be large enough, as creative and productive as we can make it? We can no longer accept all research on faith, or believe that research, just because it is called research, is bound to be good. We must more generally recognize that first-rate research depends upon first-rate people – people working with a sense of mission and in a favorable environment, and that numbers can never substitute for quality.

The quality of our national research effort also depends upon the proper allocation of effort and funds among the several categories of research and development. We now give too much emphasis to development and too little to basic research.

Despite some serious gaps in our program, more first-rate work is now done in the sciences in the United States than in any other country. The challenge before us is to continue this leadership in the future. Our principal deficiency is at the great peaks of achievement over and above the first-rate, where the intellectual breakthroughs occur, where the seminal concepts and discoveries originate that appear only a few times in each century and that change the course of science. By heightening and broadening our efforts in basic research, we provide the best possible opportunity to bring about these achievements of genius and to nurture the great men who will advance all of our efforts, both pure and applied.

As I look at the total spectrum of our research and development effort, I see deficiencies also in the area between basic research on the one hand and development on the other – that kind of research that is sometimes called supporting research, or engineering research, or subsystems research. After observing many research and development programs, I am sure that we would avoid costly mistakes in hardware development if we saw to it that the supporting research was done more thoroughly. As the head of one of our great companies recently observed, "The cost of development is far greater than the cost of research, and if a big development gets off on the wrong foot, the price is terribly high."

In saying that we need more and better supporting or engineering research, I am also saying that we need to strengthen our engineering. Engineering has a pivotal responsibility in our total technological effort; and as this effort becomes more sophisticated, we need to draw more heavily on science, and we must have engineering education and practice equal to this new and more demanding complexity. We need more engineering research in our engineering schools and more strong graduate schools of engineering, not only because we need more of this research but because we need more engineers deeply nurtured in the atmosphere of research.

Since World War II there has been a great increase in the volume of research carried on in nonprofit institutions. There has not been a comparable increase in the capital equipment employed for this research, nor has the provision of equipment kept pace with the changing need for new devices for scientific measurement. So little attention and so few funds have been directed toward meeting this problem in the United States during the last 10 years that one

now finds that many university laboratories in Europe are better equipped than those in this country.

As our research activity has grown in universities, hospitals, and other nonprofit institutions, we have failed to meet this growth with a comparable increase in buildings. If American science is to realize its full potential, we must face up to this problem of capital needs. Science, no less than industry, cannot flourish when limited by obsolete plant and equipment.

I would stress the importance of maintaining and increasing research and development in a time of recession such as we now experience. Advancing technological knowledge provides a company with the agility to react rapidly to changing economic conditions. It helps create the conditions for renewed economic growth, for developing strength for the future. It helps in planning future goals, by the systematic, planned discovery of new products and methods of making them. This is true no less for the nation as a whole than it is for an individual firm. It would be a great pity if we foreordained a future hiatus in our growing technological and economic strength by permitting a reduction in our total national research effort now. In my judgment we need instead to increase basic research now because it is through basic research as it is conducted in the universities that we nurture the professional scientists and engineers of the future. It is heartening to note reports in the business press that U.S. business is taking the offensive by planning increases in research outlays, with the objective of creating "the new and better products on which their markets can expand again." We must also find ways to increase the outlays for basic research in the universities.

We also need to clarify the relation between science and economic progress. There is a widespread recognition that the economic pay-off of research is great, that it has created new products and expanded industry, that it has increased productivity and wages and introduced a new stabilizing influence in our economy.

While the economic effects of science are clear and accepted, there still remains much to be understood about the role of research in our economy. Especially do we need more refined quantitative measures of the economic forces generated by research, of the relation between research and profits, the return on research investment, the relation between research and productivity, and the contribution of research to gross national product.

I would emphasize that there are certain areas of both pure and applied scientific research where there is inadequate effort and which would benefit from national planning. A good current example is geophysics. The scientific community has made clear the opportunities and needs which face us in the field of space science, oceanography, and meteorology. There is a growing realization that we need to achieve a better understanding of the earth and its surrounding atmosphere and of the scientific interrelations between the earth, the sun, and other heavenly bodies. By achieving greater scientific understanding in geophysics, we can further the development of new technology which may permit us to counteract the depletion of the water table, to obtain greater protein from the earth, the ground, and the sea, and to find new mineral resources.

If we are to grasp these important opportunities, we must move on a wide front to achieve a co-ordination among existing institutions in the field and even through the creation of new research organizations. We must seek ways to bring together the oceanographer, the meteorologist, the physicist, the biologist, and the mathematician to form a joint attack on some of the very basic problems of geophysics. In the universities there must be revision of graduate curricula, new fellowships for graduate study, and new career opportunities provided which will attract first-rate scientists.

Another example of where we need a more concerted effort in the applied area of research is in the field of materials, particularly high-temperature materials. In order to make headway in materials research, we need one or more centers where a co-ordinated approach can be made.

So far in this discussion I have only indirectly stressed the strategic role of education in the maintenance of our technological leadership. I will not today, as I so often have, add to the great roar of educational discussion that has been in progress across the land. I will say that I hope that we will soon translate some of the talk into action, and that we will again, as the Soviets have, demonstrate a great passion for learning and a great national zeal for intellectual achievement.

Two other observations are in order.

In a still unpublished study of human resources in which I have had the opportunity to participate, the point is made that a society only produces great men in those fields in which it understands greatness. We

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During his brief "re-entry into the academic atmosphere" of M.I.T., at the end of the school year, Dr. Killian enthusiastically takes on the role of "The Most Happy Fella."

Report of the Institute

A review of progress at M.I.T. in the past year emphasizes need for understanding the complicated interrelations between technology and our society

ALUMNI DAY ADDRESS **by J. A. STRATTON**

THE year that has slipped by so quickly since we last met together in this Great Court has been a momentous one for the people of our country. Happily the nation has managed to escape major disasters, both economic and military. But there have been events to cause every thoughtful American to take stock of both our aims and our human resources. Our national pride has been somewhat bruised, but I think it very likely that these events will have been salutary if we act upon them with wisdom and vigor.

I must report to you that the developments of this eventful year have had a profound effect upon M.I.T. It was inescapable that this should be. This great institution of ours moves in mid-current of the surging stream of modern life. The problems with which we at M.I.T. are concerned are in large measure the problems of our age. If there is any one lesson that has been impressed upon the American public these past 12 months, it has been an awakening to the interplay of science, education, and national welfare.

In November, President Killian was called to Washington to serve the President of the United States as Special Assistant for Science and Technology. The choice was so obvious and the need so great that we felt bound to urge him to accept. Yet may I tell him here today how very much his colleagues and I have missed his presence. In going to Washington, Jim Killian followed in the steps of other great men of M.I.T. who have occupied positions of high trust and responsibility at times of national need or peril – of Karl Compton and Vannevar Bush ['16], of Richard Maclaurin in 1917, and of Francis Amasa Walker before any of them. On this occasion, too, I think it appropriate to pay tribute to the members of our Faculty who in countless ways have been rendering service to the national interest. The full record of these contributions will never be compiled. But it is, I can assure you, a superb record of achievement and public spirit, a record that should fill us, as Alumni, with an even greater sense of pride and confidence in the basic strength and soundness of this institution.

Tents set up in Du Pont Court and the Great Court were provided in greater measure this year, to accommodate the large number of persons taking part in the luncheons on June 13 and June 16.

Against this background of national tension and challenge, M.I.T. has had one of its most productive years. In the few short minutes available in this luncheon program, it would be impossible to report to you adequately the scope and multiplicity of ideas and plans which are in ferment upon this wide campus. Of all these activities, however, to my mind the most significant aspect of the year has been the concentration upon the educational process itself – upon the aims and methods and the substance of both undergraduate and graduate teaching.

Every part of the Institute has been affected by this critical self-examination, but it has been focused most intently on the education of the engineer. Those of you who attended the Alumni Day Symposium gained some insight of the issues that are involved in this continuing discussion of engineering education. Because I consider these matters of such consummate importance, let me summarize them briefly.

At the root of it all, of course, is our conviction that human resources constitute our only true wealth – that the future of this world will be determined by the wisdom and competence of the oncoming generation. We have a dual task in educating them for their responsibilities.

First, we must provide them with the foundations of professional training which will allow them to deal with the complexities of modern technology and, even more importantly, to keep pace with its rapidly advancing frontiers.

Secondly, we must strive to impart to them an understanding of the contemporary world, of the interrelations of science and technology with society, so that with breadth of vision they may fulfill their obligations as citizens. Whether for good or ill, we

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Soviet Education—A Lesson for America

A more profound educational approach is required in which scientific analysis becomes part of the thought processes of our people. Intellectual power is as vital as horsepower

SYMPOSIUM ADDRESS **by MORRIS COHEN**

On the fourth of October, 1957, our ancient Mother Earth bestirred herself and gave birth to a baby moon. The beaming father was not Uncle Sam but the Soviet Union. I had occasion to observe the impact of that event on the people of Moscow. There was no undue surprise or exultation, only a quiet pride in the achievement of their government and scientists. The public had been told that a satellite would be launched and there was little doubt about its coming to pass. To the people, this was but another "first" for the Soviet Union—of many in the past and many yet to come. Had not the Russians already built the first commercial jet aircraft, the largest particle accelerator, the first lithium H-bomb, and the only atomic-powered ice breaker?

Although October 4 marked the dawn of a new era in space travel, perhaps no less significant for mankind than the harnessing of nuclear energy, that day also ushered in a new respect all over the world for the remarkable progress of the Soviet Union in science and engineering. The evidence in this direction that had been accumulating over the years could usually be explained away or complacently ignored, but the meaning of Sputnik I came upon us like a dash of cold water. The shock, whether intellectual or emotional, was staggering. However, our awakening to the technological competence of the U.S.S.R., disconcerting as it was, may well prove a priceless blessing to America if we can read the lesson correctly.

General Role of Education in the Soviet Union

We must now acknowledge that the Soviet Union, within a few decades of agonizing turmoil, has emerged on the world scene as the mightiest competitor of the United States. This position is based not only on military power and political aggressiveness, but on industrial and economic strength as well. Blood, sweat, tears, and abundant resources have been poured into this attainment, but equally impressive is the special emphasis placed on the crucial role of brain power. Some 12 per cent of the Soviet budget is channeled into the education of its people.

It appears that the principal objective of education in the Soviet Union is to maximize the usefulness of the individual to the State. Consequently, the government is justified in allotting huge sums of money for enhancing the talents of its citizens. In other words, education is regarded as a realistic capital investment. At the same time, a long view is taken in this educational objective: abstract mathematics, basic science, the arts, and body building all fall within the definition of "useful" and play their respective roles in the over-all plan.

If only in the sense that we should learn as much as possible about our competitors to understand more clearly what we are facing, it is well to look open-mindedly at the Soviet educational process. This certainly does not mean that we need admire or copy it, but there may be some deep lessons for us, nevertheless. Knowing the educational system of a country may provide a sensible way of thinking about that country.

Hence, let us consider the various levels of education in the Soviet Union, starting with higher learning and then working back to the grade schools.[1]

Institutions of Higher Learning

There are three types of colleges in the Soviet Union: universities, polytechnic institutes, and professional institutes. Almost all have five-year curricula leading to the first degree (Diploma). However, one does not go to college in the Soviet Union for a general education; there seems to be no liberal arts as such. Each student selects a professional field and the subjects are fixed accordingly.

The University of Moscow is the most impressive example of a Soviet university. The main building is a 32-story structure which stands atop the Lenin Hills overlooking Moscow. There are nearly 24,000 students at this University, including 6,000 evening and special students. The edifice houses not only lecture halls, laboratories, classrooms, and administrative offices, but also 6,000 dormitory rooms. The students are grouped in the living quarters according to their fields of study, presumably to intensify the depth of professionalization. The areas of specialization include history, law, philosophy, economics, oriental studies, mathematics, physics, chemistry, biology, geology, geography, and so on, but not medicine or engineering.

The polytechnic institutes correspond to our institutes of technology, except that the entire emphasis is on engineering, and the students do not major in

[1] For a comprehensive report on the Soviet educational system, the reader is referred to "Education in the U.S.S.R.," Bulletin 1957, No. 14 (1957), U.S. Office of Education; and A. G. Korol, *Soviet Education for Science and Technology* (New York: The Technology Press of M.I.T. and John Wiley and Sons, Inc., 1957).

any of the basic sciences. Diplomas are offered in such fields as mechanical engineering, electrical engineering, building construction, metallurgy, engineering economics, hydrotechnics, radio-technics, and physico-mechanics. The Leningrad Polytechnic Institute is the largest of its kind in the U.S.S.R. and is sometimes referred to as the M.I.T. of the Soviet Union. The enrollment at L.P.I. is twice that at M.I.T. although the number of graduate students is only about 200. Another polytechnic institute I saw was the one at Sverdlovsk in Siberia where the enrollment is also substantially larger than at M.I.T.

The Moscow Steel Institute may be taken as an example of a professional institute. Here, 2,500 students are majoring in ferrous metallurgy, with specialization in such branches as blast furnace, open hearth, electrometallurgy, metallurgical equipment, foundry, physical metallurgy, physical chemistry, and metal physics. Also in Moscow is the Kalinin Institute for Non-Ferrous Metallurgy where 2,000 students are working for degrees in non-ferrous metallurgy and specializing in numerous subdivisions of that field. Thus, there are more students enrolled in metallurgy in the city of Moscow alone than there are in the entire United States. Such technical institutes throughout the U.S.S.R are graduating five to seven times as many metallurgists per year as we do; in fact, they are turning out more female metallurgists than we are male metallurgists! Similar situations undoubtedly prevail in other branches of engineering.

The students pay no tuition or fees when attending institutions of higher learning, and the charge for room and board is only a dollar or two per month.[2] Eighty per cent of the students receive payments from the government for going to college. The stipends amount to $25 to $100 per month and are manipulated by the Ministry of Higher Education to attract students into the various professional fields in the desired numbers. To appreciate the magnitude of these stipends, it may be noted that a laborer can get by with $80 per month for a family of four. There are also many prizes and awards for scholarship.

The incentive system which is so evident in the Soviet education process is actually woven throughout the fabric of that country. When a factory exceeds its production quota, all the personnel from the managing director down to the unskilled laborers share in bonuses, and these increments are set alluringly high compared to the base pay. Hence, there is not only reward for hard work and accomplishment, but everyone feels the pressure from his associates to maintain a stiff pace. Little reliance seems to be placed on the communistic principle that everyone should strive to make his maximum contribution and receive only what he needs in return. The Soviet government now employs wages and rewards, rather than ideals or compulsion, to direct the flow of man power and brain power into the desired channels.

It has been well publicized that the Soviet institutions of higher learning are graduating large numbers of engineers, perhaps two to three times as many per year as in the United States. Of their two million students in college, 60 per cent are seeking degrees in engineering and science. But what about the quality of their training? The quality is good for Soviet purposes. Although the five-year curriculum in any branch of engineering may become quite specialized in the fourth and fifth years, the first three years contain a solid diet of basic and applied science. Professional subjects start in the third year, becoming more and more oriented towards the specialty in the last two years. A thesis and industrial work are required in the curriculum, and the thesis must be defended before an independent commission.

The only nontechnical subjects are a foreign language, economics, Marxism-Leninism (history of the Communist Party), philosophy (dialectical materialism), physical training, and sports. No attempt is made to provide for general education, possibly because the plan of industrial expansion calls for a tremendous number of specialists in pin-pointed tasks. With the great concentration on production of capital goods and heavy equipment, it may take another decade or two before versatility in their engineers will become as remunerative as specialization. After all, the stress on breadth in engineering education now current in the United States only goes back about a generation. There is not the slightest question but that the Soviet government will recognize similar changing requirements in due course and will shift the educational emphasis when necessary.

In the meantime, one has only to visit some of the modern plants in the U.S.S.R. to see that their engineers are working with boldness and imagination in the design of equipment and processes, taking advantage of published research with surprisingly little delay. Preoccupation with productivity rather than profit is the order of the day, and the engineers are deriving both national acclaim and personal satisfaction for their accomplishments.

Primary and Secondary Schools

If the Soviet institutions of higher learning can be judged successful by any criterion, much of the credit belongs to the underlying pre-college system. This is where a solid foundation is laid for further education. The Soviets have planned and replanned the educational process many times since the Revolution, but despite violent swings in philosophies and methods, there has evolved an integrated system in which the universities and institutes can now take for granted what the student is supposed to know when he graduates from high school. The grade schools develop the discipline of serious study, drive for scholarly attainment, and respect for authority. At an early age, the youngsters receive powerful doses of mathematics, science, foreign language, and skill subjects. The humanities and social sciences are not neglected either; actually, it is in the pre-college years that the student finds his main exposure to these subjects, although here the substance may be brazenly molded to serve ideological purposes.

The elementary and secondary grades are combined in a 10-year school which may be compared with the American system in Figure 1. Our youngsters start at the age of six and spend 12 years pass-

[2] The dollar figures in this article are based on the tourist exchange of 10 rubles per dollar. This appears to be a more realistic conversion than the official exchange of 4 rubles per dollar.

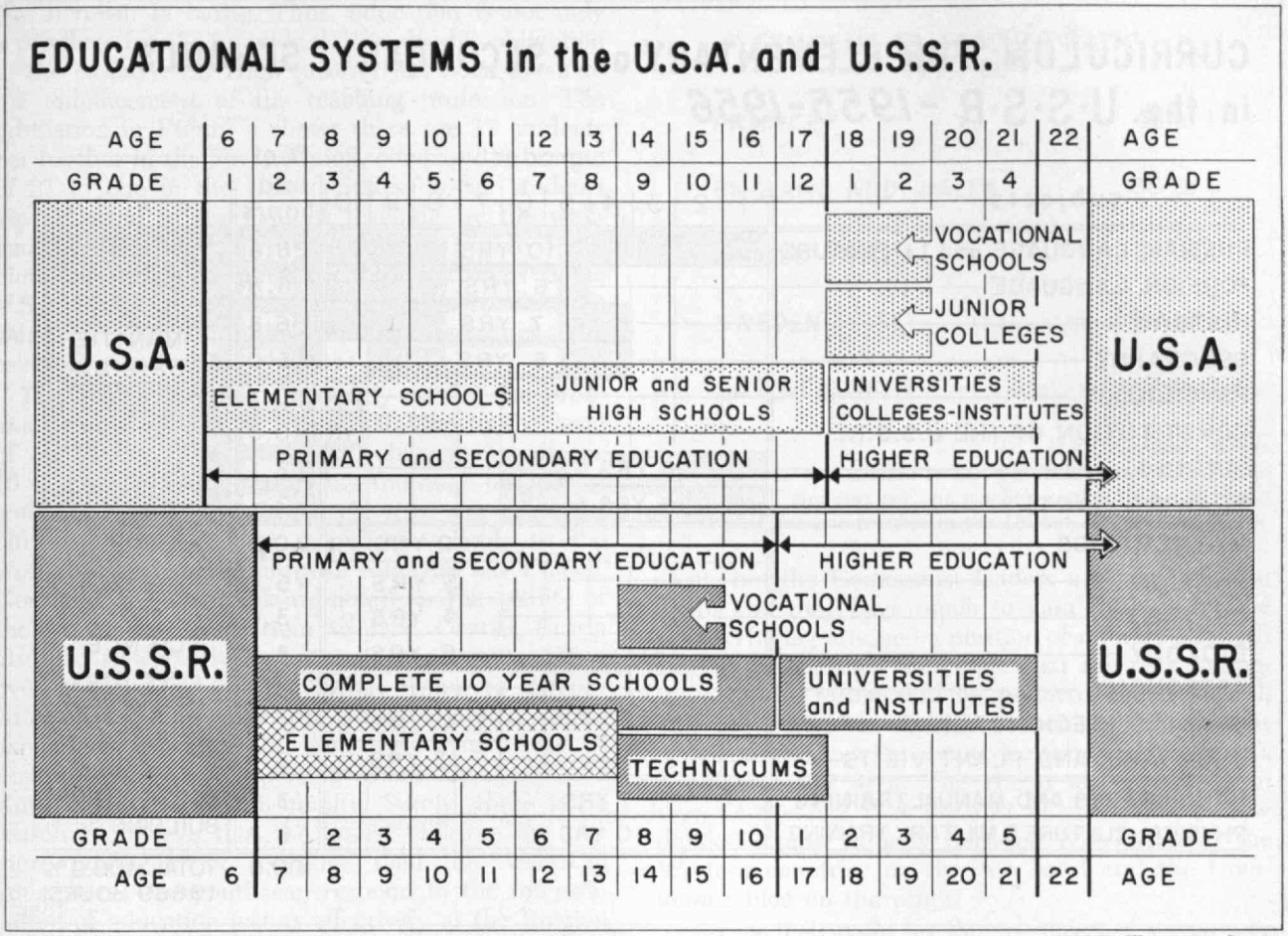

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Fig. 1. Comparison of educational systems in the United States and in Russia. Soviet children start to school at age seven, but attend for six days a week and have shorter summer vacation than American children.

ing through the elementary and junior-senior high schools. The Soviet children start at the age of seven and spend only 10 years acquiring their primary and secondary education. In effect, the 10-year school comprises seven years of elementary school and three years of high school. During these 10 years, the pupils attend just as many class hours as ours do in 12 years. This is accomplished by shorter summer vacations and a six-day week. Thus, the Russian youngsters are ready for higher education one year earlier than ours. Then, after a five-year curriculum at the higher level, they graduate at the age of 21 or 22, as do the American students after their customary four-year college course.

Those Soviet children who cannot survive the rigor of the 10-year school may be shunted off into technicums for intense and respectable training at the technician or subprofessional level. Alternatively, they may attend vocational school or labor reserve schools. Tuition is free and the students receive monthly stipends ranging up to $35 per month. The technicums are of particular interest because, through them, the Soviet educational system is generating highly qualified support-personnel for industry, research, medicine, public health, and so on. With such backing, the engineers, scientists, doctors, and other professionals are not only freed from routine duties, but are "pushed up from below" into operations of responsibility and prestige. The Soviet Union is turning out about 10 times as many junior engineers and technicians as we are in the United States. Sixty per cent of the students in the technicums are graduates of the 10-year schools, who cannot or do not go on to college at the time. On graduation from a technicum, the student is permitted to take entrance examinations for higher education if he aspires to become a professional engineer.

The subjects covered in the 10-year school are listed in Figure 2 (page 486). Somewhat over half the curriculum may be classified loosely as "humanities and social sciences." Of special note in this category are the six years of foreign language starting in the fifth grade. Here, there is a choice, and about three-fourths of the pupils elect English. Every 10-year school in the U.S.S.R. offers English as a foreign language, in contrast to only a score of high schools in the U.S.A. that offer Russian. About four-fifths of our high school pupils study no foreign language.

Slightly less than 40 per cent of the 10-year curriculum is devoted to mathematics, science, and technical subjects. The mathematics carries through algebra, solid geometry, and trigonometry to a stage that is reached by less than 10 per cent of our high school students. The five years of physics also stand out in marked contrast to the situation in the United States, wherein about three-fourths of the students take no physics at all. The four years of chemistry required of all students in the Soviet 10-year school are likewise significant, considering that two-thirds of our students study no chemistry at all. Biology,

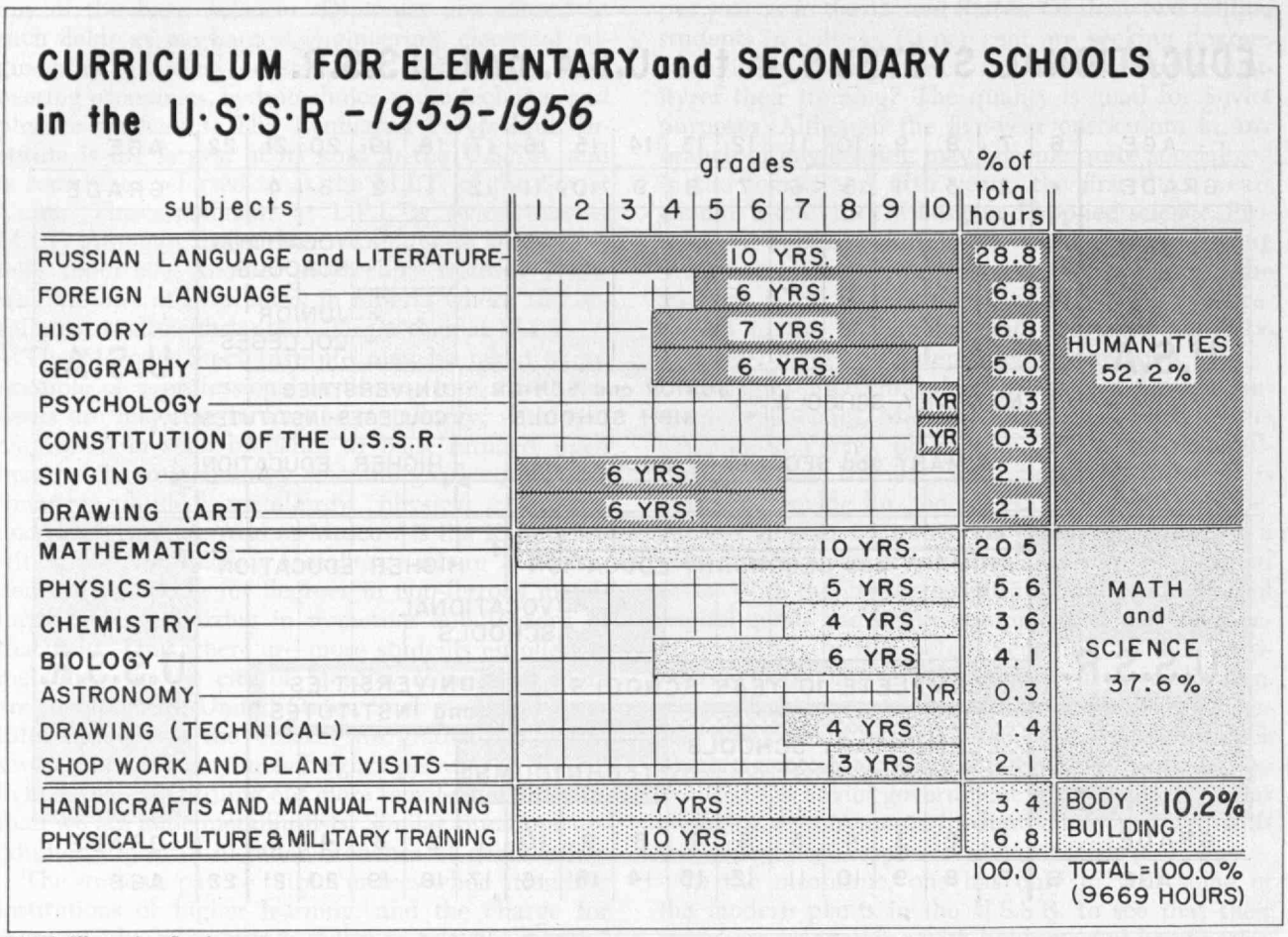

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Fig. 2. Subjects covered in the 10-year school period in Russia. Of special interest are the six years of foreign language which start for Russian children in the fifth grade.

astronomy, technical drawing, shop work, and plant visits are also part of the Soviet curriculum.

Body building is stressed, too. Approximately one-tenth of the class hours is devoted to the development of manual skills, physical education, and military training, with the latter two subjects being spread throughout the entire 10 years.

The over-all curriculum is intense and rigid. It contains a substantial core of mathematics and science, which has now been well publicized in this country, but the nontechnical subjects constitute an even larger part of the program and are not taught for fun or diversion. Another thought-provoking point is that all the 1.5 million youngsters graduating annually from the Soviet 10-year schools (this is somewhat larger than the annual output of the high schools in the U.S.A.) not only take the subjects shown in Figure 2 but have to pass comprehensive examinations in order to graduate. This emphasis on mathematics and science in these examinations (Figure 3) is astounding when one realizes that all students emanating from the 10-year school system must pass these oral and written tests whether they go on to careers in law, medicine, history, or philosophy, let alone science or engineering! The algebra examination is about equivalent to the advanced mathematics achievement test of our college boards, and the physics test virtually corresponds to the level of freshman college physics in this country.

FINAL EXAMINATIONS FOR GRADUATION FROM THE 10-YEAR SCHOOL IN THE USSR

1.	RUSSIAN LANGUAGE	WRITTEN
2.	RUSSIAN LITERATURE	ORAL
3.	HISTORY	ORAL
4.	ALGEBRA (Corresponds to Advanced Mathematics in College Board Examinations)	ORAL
5.	GEOMETRY AND TRIGONOMETRY	WRITTEN
6.	PHYSICS (Corresponds to Advanced Placement Physics in College Board Examinations)	ORAL
7.	CHEMISTRY	ORAL

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Fig. 3. Emphasis on examinations in mathematics and science is amazing, considering the fact that some Russian students may not even go beyond the 10-year school system.

The sobering fact here is that pre-college education in the Soviet Union is not only providing a substantial base for careers in science and engineering but it is also helping to weave science into the Soviet culture – even for those persons who do not go into technical professions.

The Lesson

The Soviet students are able to absorb a large amount of subject matter and intellectual discipline for two reasons: (1) Excellence in scholarship is respected and sought after as one of the best routes to a life of high income, prestige, and satisfaction. The government recognizes and rewards scholarship

like heroism in battle. Thus, education is not only a privilege for the individual, it is also his obligation to the country. (2) High priority has been given to the enhancement of the teaching profession. The tabulation in Figure 4 shows there are 17 students per teacher in the Soviet Union, compared to a ratio of 27 to one in the United States. Soviet students are attracted to the field of teaching by the well-known capitalistic incentive – money. Figure 5 depicts the average earnings for three vocations in the U.S.S.R. and the U.S.A., in comparison with the wages of laborers in the respective countries. The relative incentives are obvious.

The Soviet Union is apparently solving the problem of mass education without sinking to the level of mediocrity. The scholastic achievements of the 10-year school, notwithstanding the huge number of students that it processes each year, are exceeded only by the very best secondary schools in the United States. Some European countries like France, Germany, and Denmark are noted for the quality of their secondary education; in fact, Czarist Russia also had superb schools but only for the elite. However, it remained for the Soviet Union to demonstrate that the base of its pre-college system could be expanded to match the American magnitudes of quantity, without departing markedly from the European standards of quality. Surely, there is no reason to believe that the Soviet children are any more intelligent or receptive than the American youngsters. Our youth can respond to the intensification of education just as effectively as the Russian children have responded to the spreading of education in their country. Parents and local schools in the United States that expect any less of our children are doing them and their future a major disservice.

The task for America is formidable and complex but not overwhelming. Of course, merely spending more money on education will not solve the problem, but we have been diverting such a small fraction of our wealth and income to education, relatively speaking, that increased expenditures in this direction would be the most tangible step we could take. After all, the 15.7 billion dollars per year that we devote to education in all forms is hardly more than our annual spending for tobacco and liquor. Let us say, for the sake of a target, that our bill for education should be doubled during the next 10 years. This would mean increasing our outlay by 1.5 billion dollars each year until the annual cost for education is 30 billion dollars. It would still be less than the present annual budget for national security, which we would unhesitatingly boost by orders of magnitude if we were faced by a shooting war. We could even afford to be extravagant because we could not afford to do otherwise. On the other hand, the balance of military power presents strong deterrents to war, and although we must be ever alert for this dreadful possibility, to prepare for it alone would be tantamount to relying on a Maginot Line.

The vigorous activity in the Soviet Union at the present time is the Twentieth-Century version of the western gold-rush days in America. The Soviet people have unleashed a hitherto pent-up vitality which has little to do with their particular form of government; but the Communist leaders are receiving the credit and they have much to gain by keeping the peace. Having attained a position of military strength and stalemate, they anticipate that the real competition of the future will be political, technological, and economic, to align the uncommitted nations which now comprise about one-third of the earth's population and area. The stakes are enormous in view of the fact that the rest of the globe is now divided almost equally between N.A.T.O. and the Western countries on the one hand and the Communist bloc on the other.

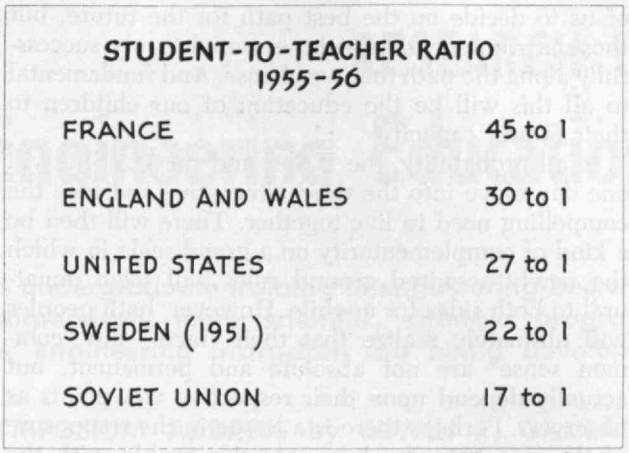

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Fig. 4. From the student-to-teacher ratio listed above, the Soviet has 17 students per one teacher, compared to 27 pupils for one teacher in the United States.

Any such struggle for the orbitizing of uncommitted nations will go on in the minds and hearts of men, and we will not meet it with any degree of sophistication unless we acknowledge the crucial part that is to be played by education. In the not-too-distant future, we as a nation may have to choose from among three courses of action. We may decide to enter that competition, and if so, we shall certainly want to maximize our potential for success. Or, if we elect not to enter the competition, we shall want to turn away with the conviction that our supreme goals lie in other directions. Or, we may reconcile ourselves towards finding a way of working together with the Soviet Union. Not only will enlightenment, wisdom, and understanding be required

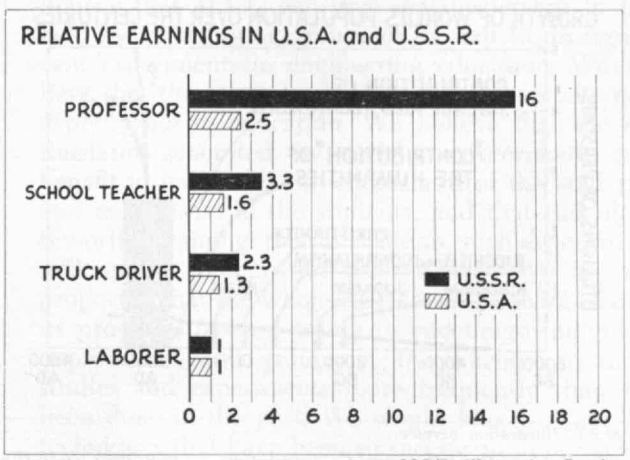

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Fig. 5. Average earnings for three vocations in the United States and in Russia, compared to wages of laborers.

of us to decide on the best path for the future, but those attributes will also be essential to ply successfully along the path that we choose. And fundamental to all this will be the education of our children to their utmost capacity.

In all probability, the U.S.A. and the U.S.S.R. will one day move into the third alternative and face the compelling need to live together. There will then be a kind of complementarity on a grand scale in which the newly acquired ground rules will seem unnatural to both sides for a while. However, both peoples will ultimately realize that their "facts" and "common sense" are not absolute and permanent, but actually depend upon their respective viewpoints as observers. Perhaps there is a lesson in the composure of the scientist who lives interchangeably with the particle theory of light on Mondays, Wednesdays, and Fridays, and with the wave theory of light on Tuesdays, Thursdays, and Saturdays, adopting each as necessary for the best insight into nature – yet without becoming frustrated about the changeovers.

If this globe were endangered by an invasion from space, the nations of the earth, including the U.S.A. and the U.S.S.R., would surely join in common brotherhood to defend the world. We would then find that the two peoples have much in common of greater substance than that which separates them. Threat of a world-wide plague could likewise bring us together. As an alternative then, when shall we have the imagination, the courage, and the educational maturity to devise our own methods for achieving some basis of co-operation? Scientific projects would seem to offer the optimum basis for breaking the ice. Think of how the hopes of the the world would be stirred if the United States and the Soviet Union combined their technical forces to launch a space ship to the moon! Or, if the moon has already become a cosmic football because each country wants vested interests there, what about forming a partnership to land on one of the planets; why wait for Martians to invade the earth? Conceivably, such a co-operative venture by the U.S.A. and the U.S.S.R. in the realm of science and technology could pave the way for establishing more compatible ground rules on earth!

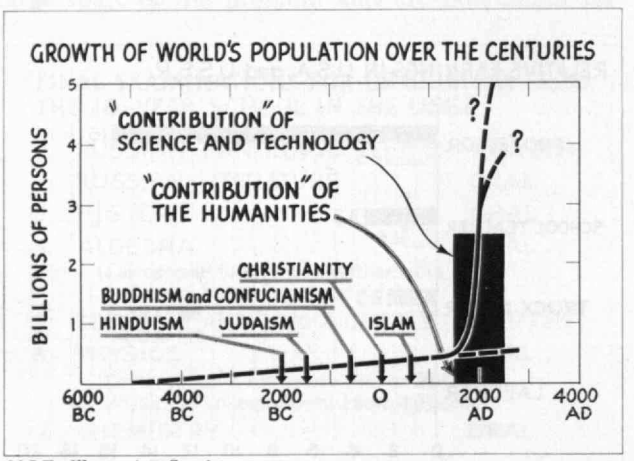

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Fig. 6. Growth of the world's population, particularly since the impact of science and technology on man and the beginning of the industrial age.

In the intensified process of general education that we are discussing for America, there must be a substantial component of science, for the spectrum of total knowledge is expanding almost explosively due to science and technology. The conventional liberal education will not be "liberal" in the future if it does not contain science subjects in its very core. These should be serious subjects; the science-can-be-fun motivation is hardly adequate. We are not dwelling here on the need for educating the large number of scientists and engineers who will have to solve the tehcnical problems lying ahead. Sooner or later, these challenges will become so urgent that our society will provide the incentives to attract enough students into the relevant professions. But any society is doomed if it tries to take the inexpensive way out by simply hiring scientists and engineers as mercenaries to split the atoms and keep the wheels turning. A more profound educational approach is required in which scientific analysis becomes a part of the thought processes of the people.

The impact of science and technology on the very existence of humanity has been graphically portrayed by Lawrence Hafstad[3] in the world's population curve of Figure 6[4]. For most of recorded history, the population of the earth has grown at a modest rate despite the rise and fall of civilizations, war and famine, and the concomitant emergence of government, law, trade, art, literature, and religion. The sweep of the time scale in Figure 6 is pointed up by the starting dates of the world's great religions. Suddenly, almost three centuries ago, the population began to increase cataclysmically, undoubtedly as a result of the impact of science and technology and the entrée of the industrial age. The detailed nature of these interactions, even to the undeveloped corners of the earth, has been lucidly described by Harrison Brown[4]. There seems to be a natural urge for man to cling to life, and almost instinctively he has groped his way to take advantage of (and hence become dependent on) the life-sustaining benefits of science and its applications. There is no turning back, for as the population continues to skyrocket, mankind will become evermore reliant upon new sources of food and energy, transportation and communication, machines and instruments, antibiotics and sanitation, and all the other products of a technological civilization.

If America is to play a prominent role in meeting these needs without becoming a slave to them, the importance of general education with an appropriate content of science takes on new dimensions. It becomes evident that intellectual power is no less vital than horsepower. We must now have the will and the foresight to direct a larger fraction of our wealth into the simulation of mental pursuits even at the expense of comforts and conveniences. Quite likely, this effort will entail a retarded advance in our material living standards, but in return it will nourish a taste for finer things that will ultimately give

(Concluded on page 508)

[3] Lawrence R. Hafstad, "Science, Technology, and Society," *The Technology Review*, **60**:111 (December, 1957).

[4] Harrison Brown, *The Challenge of Man's Future*, page 49 (New York: The Viking Press, 1954).

RESEARCH IN Undergraduate Engineering Education

As undergraduate training in engineering becomes progressively more scientific, stronger programs for engineering instruction are being developed

SYMPOSIUM ADDRESS by EDWIN R. GILLILAND

PROFESSOR MORRIS COHEN ['33] has described the educational program of the Soviet Union. I will discuss with you a study now going on at M.I.T. relative to our own engineering education. First, because of the sequence of these talks, I would like to make it clear that the study of the Committee on Engineering Education is in no way related to the Russian situation. The committee was appointed by Dean Soderberg at least a year before the Sputniks were launched, and the Russian efforts have not influenced our deliberations. We are considering what can be done to improve undergraduate engineering education at M.I.T.

We believe that M.I.T. has had and does have a very good program in engineering education. Just looking at what you and other Alumni have accomplished convinces us that the program has been good. We are immodest enough to believe that at least a part of the success of our graduates is related to the training they received while at M.I.T. However, we know that the program can be improved, and it can be much better. Those of us who have been teachers for a long time realize how much more could be accomplished if we could only keep the students excited about their work. Today, as I am sure it was in your day, we have good students; but if we could fire their enthusiasm, their accomplishments and their potential could be greatly increased. I have just finished grading final examinations, and this always is a discouraging task. It very forcibly shows you how little of the real potential of your students you have been able to develop. We need to develop programs, methods, systems that will do this more effectively.

The fact that the program has been good in the past is one of our difficulties. The present study of our educational program is not new. This is almost a continuous process at M.I.T. After the war, the President appointed the Educational Survey Committee, and this group spent several years analyzing the problems of our undergraduate education. On the basis of their results, a new committee structure was formed and committees were appointed for a continuous study of the undergraduate educational policy. In addition to these analyses, a few years ago there was a committee under the leadership of Professor Gordon S. Brown ['31], Head of the Electrical Engineering Department, which looked at our educational work in the engineering field. You may ask, with all this study, why do we have another committee? We also ask ourselves the same question. But I believe that our justification is in the fact that even with all these studies, we find that our program is very much the same as it was in the past, and we are confident that it should be improved. As a result of these studies and of studies by other non-M.I.T. groups, there have been many suggestions of changes that might improve the program, that might increase the motivation of the student, that might increase the motivation of the staff; but to date, no one has come up with any suggestion which is so obviously better than what we are doing at present that the Faculty as a whole will become enthusiastic over it. Without almost unanimous enthusiasm, a new program will not be successful. This difficulty in finding universal enthusiasm is not surprising in view of the long development of our present system. What we are attempting to do is to improve on a good and tested program.

I do not know of a single program that I believe would obtain or should obtain the enthusiastic support of our entire Faculty. Each of the many suggestions has potential advantages and potential disadvantages. Each has its advocates and those who are less enthusiastic. Our committee has come to the conclusion that the best way to improve undergraduate engineering education at M.I.T. is to encourage the enthusiasts to carry out their experiments. We believe that M.I.T. can give real leadership in this field by encouraging groups of its staff to do significant experiments in engineering education. We believe that the Institute should boldly undertake new experiments in education. We believe that the enthusiasm generated by such an experiment is a benefit in itself, and the enthusiasm of the staff creates enthusiasm in the students, and that this alone is worth obtaining; that in addition, such experiments will appeal to many of the students. We are not proposing that the whole Engineering School change its program, but are trying to encourage individual departments and groups of the Faculty to make studies and experiments more frequently than has been done in the past. We would like to adapt the techniques that have been so successful in our scientific work to our educational program. We need to do research in education. Such experimentation at

the departmental level is not new at M.I.T., but we would like to encourage and increase the frequency of such tests.

Before discussing some of the experiments we are considering, let me take a few minutes to describe what we believe is the objective of the undergraduate engineering program at M.I.T. The committee considered whether M.I.T. should have an undergraduate program in engineering. We are unanimous in our conviction that such a program is desirable, and that it should be continued. The Educational Survey Committee gave as its opinion that the objective of undergraduate training in engineering at M.I.T. was the development in the individual of the ability to handle new and unfamiliar problems with competence. We agree with this objective, but would like to make it a little more specific. We would like to see the objective as the development of each individual to his full potential by (1) a sound general education, (2) a thorough training in basic and applied sciences, (3) the development of intelligent judgment in the application of scientific principles to complex problems, and (4) an understanding of the methods needed to create new knowledge. We have a real opportunity, with the type of students we have, to make an outstanding contribution to the whole country if we can come closer to obtaining these objectives.

M.I.T. should operate an educational research laboratory or pilot plant. We have many "processes" we would like to evaluate. One of these, which we have given a major study, is termed "engineering sciences." The engineering sciences are those scientific areas taught in the Engineering School whose subject area is essentially common to all branches of engineering. For example, we consider thermodynamics, statics and dynamics, properties of materials, fluid dynamics, rate processes, electrical phenomena, as examples of this type. At M.I.T., some of these are given by a single department for engineering students, while in other cases, several departments give instruction. When the time spent on these subjects is added to that in the basic sciences and in the humanities, it accounts for a high percentage of the total program for undergraduate students in engineering; and there are those who believe that there should be only a single, general undergraduate program in engineering rather than the various departmental programs that are common today. This idea has certain attractions. It also has many obvious disadvantages. We have examined this carefully and do not believe that this is the best arrangement at the present time.

Training in undergraduate engineering in the United States will progressively become more and more scientific. The scientific content of the program will be increased and the professional aspects deferred until the graduate years. This does not mean that we believe all students should continue for graduate work. We believe there are large groups of our undergraduates who will make their greatest contribution by taking their bachelor's degrees and going into industry. Some of these will obtain professional training from the industrial companies; but many of them will choose to go into a phase of industry in which highly specialized engineering training is not necessary, but in which a basic, broad, rigorous scientific training is very beneficial. Others of our students will be the leaders in their professional field. They will make the technical contributions of the future. In general, these men will continue for graduate study; and for this latter group, a basic foundation in science with a broad program of engineering sciences would give them a superb background for their graduate specialization.

Our real problem is, how should a stronger engineering science program be introduced at M.I.T.? We are convinced that the whole Engineering School should not be so converted. But should we have simply an additional course which could be selected by those students who were attracted and motivated by this type of program, should we have a new Department of Engineering Sciences or Applied Sciences, or should each department give the student the option of taking either an engineering science type of program or a more professional sequence? We have concluded that this is a major problem and that it requires serious study by the Faculty. We have suggested that in each of these areas we should establish a group of the Faculty, with representation of each of the engineering departments, to make a detailed study of what should be done. Should we have a common course for all the students taking this particular subject; and if we should, what should such a course involve? We believe that such studies will have very great benefit. They will bring groups together which will make penetrating studies that will include the viewpoints of all the departments. As a result, the Faculty as a whole will be able to learn just what would be done if we had such common subjects. They will be able to decide whether such a program would be good for all of our students, or for only a limited few, or for none. As a result of these studies, the individual members will carry back a viewpoint that will improve the courses given by the departments. We feel confident it will be a major benefit.

During the coming summer, we are beginning two such studies. Professor Ascher H. Shapiro ['38] of the Mechanical Engineering Department is heading a group of the staff which will look broadly and in detail at the engineering science problem to formulate

(*Continued on page 528*)

Participating in the Alumni Day symposium were, in usual reading order: Morris Cohen, '33, Professor of Physical Metallurgy; Gilbert M. Roddy, '31, President of the Alumni Association; Holt Ashley, '48, Associate Professor of Aeronautical Engineering; and Edwin R. Gilliland, '33, Professor of Chemical Engineering.

Astronautics—

A CHALLENGE IN ENGINEERING EDUCATION

The most successful way to educate engineers capitalizes on the natural motivations and enthusiasms of students

SYMPOSIUM ADDRESS **by HOLT ASHLEY**

LET me begin my talk by stating three articles of faith, arrived at through a continuing process of discussion, trial, and educational experimentation by the faculty of the Department of Aeronautical Engineering:

1. We believe that a sound engineering education, regardless of its length in years, has four principal interrelated elements. There are: (a) basic and applied science; (b) general education in the humanities; (c) engineering science; and (d) professional engineering activity. All this is needed for the greatest good of the individual and the society in which he will work; no element can safely be omitted.

2. We believe we have a responsibility to establish habits of thought which engender intelligent judgment in the application of scientific principles to the solution of complex problems, involving the synthesis of many disciplines and finely balanced engineering compromises.

3. We believe that this sort of preparation will be equally suitable for careers in applied scientific research or professional engineering. But to achieve it, the subject matter must be carefully integrated, and taught by a faculty which contains both scientists and practicing representatives of the engineering profession. The M.I.T. School of Engineering today is endowed fortunately with just such a faculty.

Where does astronautics fit into this pattern? The answer lies in the key word "motivation." The American undergraduate student of technology is a peculiar animal, unrecognizable to educators in the classical European tradition. You can expose him to the same fact or concept a dozen times, and if he does not comprehend what it is for, he will forget it. But show him once where that fact fits into the operation of a long-range radar, or a nuclear rocket, or a satellite space station and he will remember it forever. This is our answer to the intense emphasis on intellectual enhancement in the U.S.S.R.

Students with unquenchable enthusiasm are knocking down the doors of the School of Engineering—and the School of Science. In the particular areas of high-speed flight, space travel, and astronautics we can see their influx with unusual clarity. Two years ago the graduating group in Aeronautical Engineering made up about 5 per cent of the Class of 1956. Today some 9-11 per cent of each entering class indicate a preference for aeronautical and astronautical engineering, and almost every one of their application forms contains some reference to an interest in space. But most of these boys and girls share some delightful illusions. They do not realize that to work in this field they must know a lot about partial differential equations, the wave function of quantum physics, Hamilton's principle of dynamics, nonequilibrium thermodynamics, chemical kinetics. How can we use their motivation as the springboard over such hurdles to their own ultimate success and to the promotion of the welfare of the free world? A partial or tentative answer may be in the educational pattern developing within the Department of Aeronautical Engineering. If you like, it is one of the "educational experiments" to which Professor [Edwin R.] Gilliland ['23] has just referred. The remainder of my talk attempts in brief to outline this experiment.

Figure 1 describes the framework within which we try to operate. The foundations, the roots of the tree, are in the aforementioned basic and applied sciences. Some of these are far better taught by the mathematicians, physicists, and chemists who can give engineering students at least a colorful glimpse of current research activities in their own fields. Others are taught by engineers, drawing heavily on the motivation potential of examples from modern engineering problems. "Engineering science," the trunk of the tree, we cover almost entirely within our own Department. We must deal in quantitative terms with nonrigid bodies moving at high rates of speed under the action of enormous forces, subject to critical strength-to-weight requirements, having no practical use unless high performance is achieved. To meet the associated requirements, the essential background in dynamics, structural analysis, propulsion, guidance and communications, and fluid mechanics takes considerably more time and effort than for some other fields of engineering.

All of this preparation leads us to the branches of the tree. There, under the heading of professional engineering, every student has the chance to try his wings on a thorough, detailed project having to do with one or more of the devices illustrated in the figure. Most of my audience would never recognize the senior and graduate "drafting rooms," as they are sometimes miscalled. Here every day the Nyquist criterion is being applied to study the stability of an automatic control system; nonlinear theory of elasticity goes into the structural analysis of thin shells;

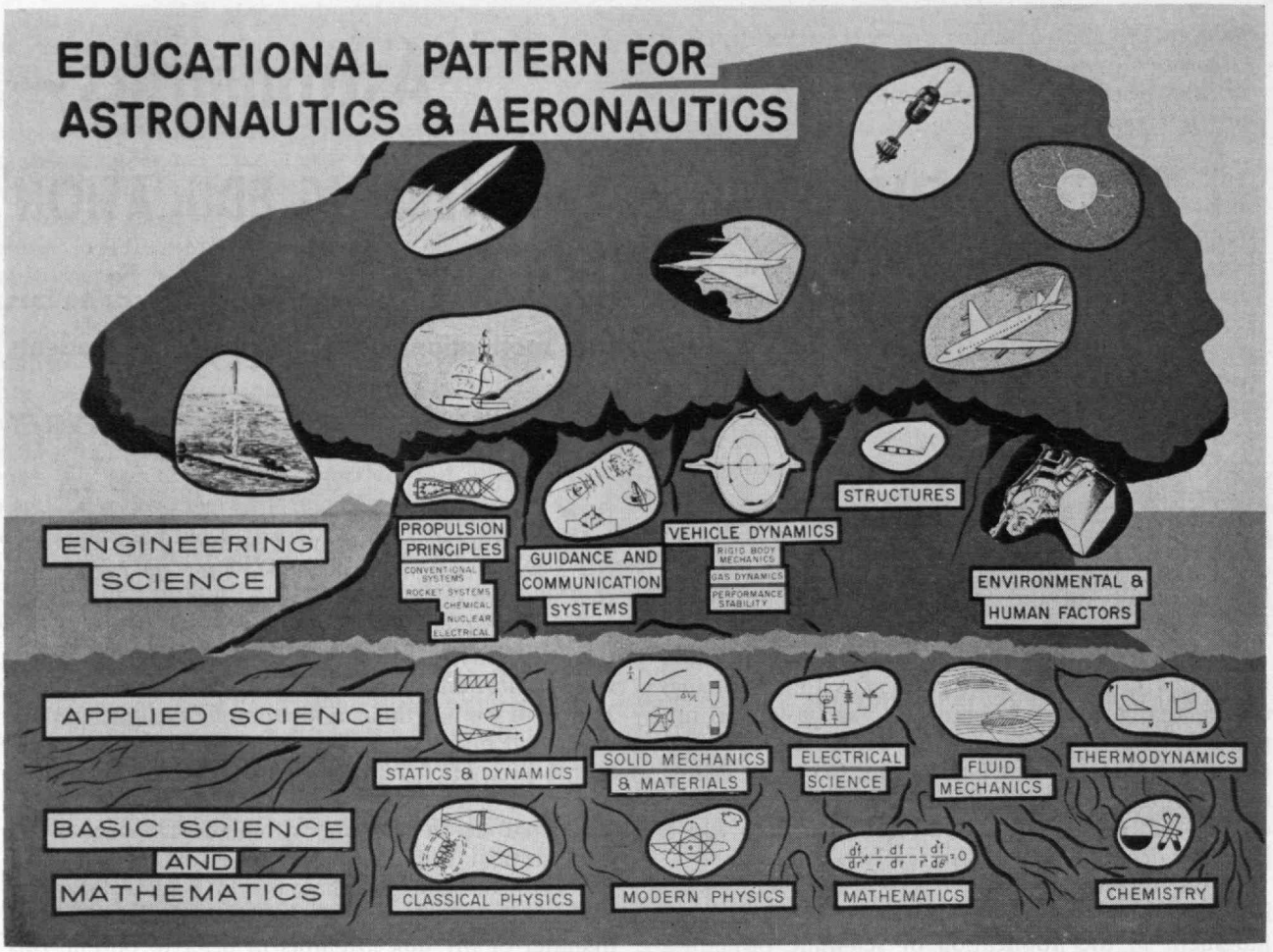

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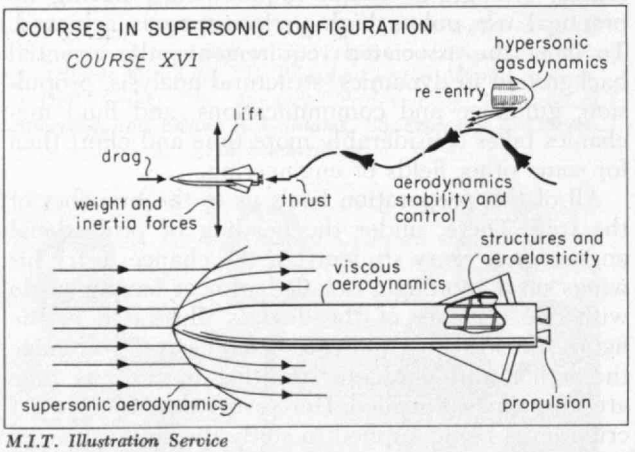
Fig. 1. Areas of knowledge with which the Department of Aeronautical Engineering is concerned, showing how specialized professional projects are rooted in basic science and engineering knowledge.

the calculus of variations is used to compute optimum trajectories of missiles and space vehicles. There is not a handbook within 500 feet; the publishers discovered that they become obsolete too fast. Furthermore, they constitute a dangerous accident hazard; if a handbook suitable for designing a simple air-borne vehicle fell off a desk, it could break someone's leg.

Figure 2 illustrates how the engineering science topics are tied in for the student with various aspects of vehicle flight within the earth's atmosphere. In this illustration we see portrayed a number of important topics of astrophysics as related to major courses of study as given in the Department of Aeronautical Engineering. The purpose of this diagram is merely to illustrate the correlation between modern engineering problems and areas of study that contribute to a solution of such problems. But we have tried to indicate this correlation in an interesting way.

Too often, especially in our undergraduate work, the motivation stimulation is entirely lacking in the textbooks from which the students study. The static equilibrium of rigid bodies, for example, is often represented by means of a diagram that bears a strong resemblance to a surrealist potato rather than



M.I.T. Illustration Service

Fig. 2. Topics in engineering sciences which deal with vehicular flight in the earth's surface.

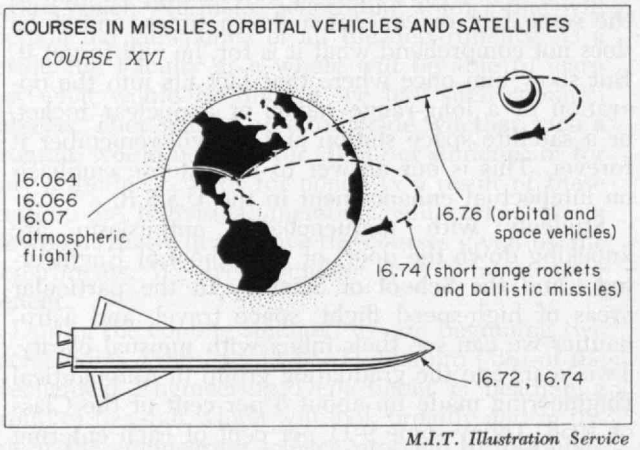


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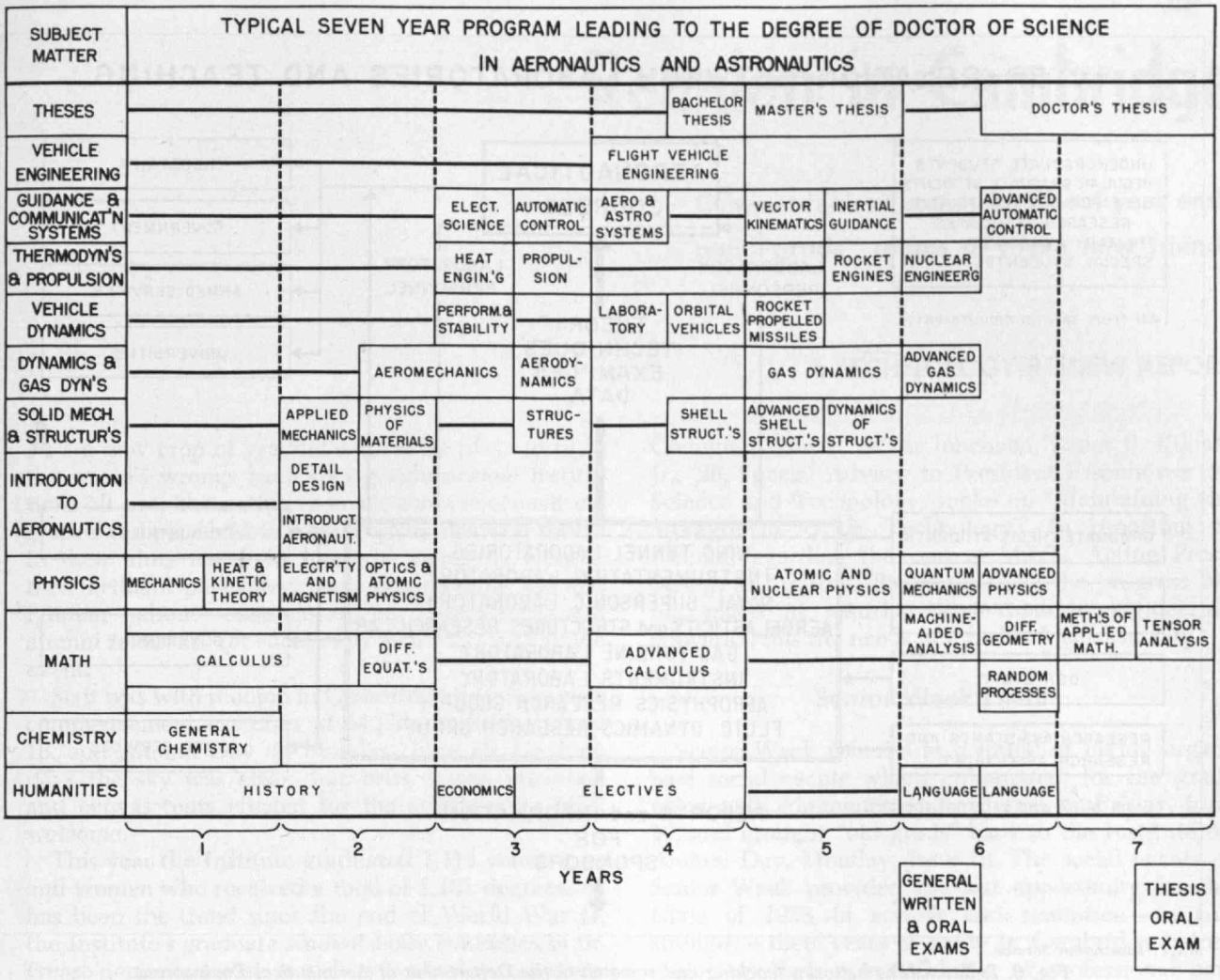
Fig. 3. Topics of instruction given at M.I.T. contributing to preparation of astronautical engineer.



M.I.T. Illustration Service

Fig. 5. Typical programs in aeronautics and astronautics leading to degrees of bachelor of science, master of science, aeronautical engineer, and doctor of science.

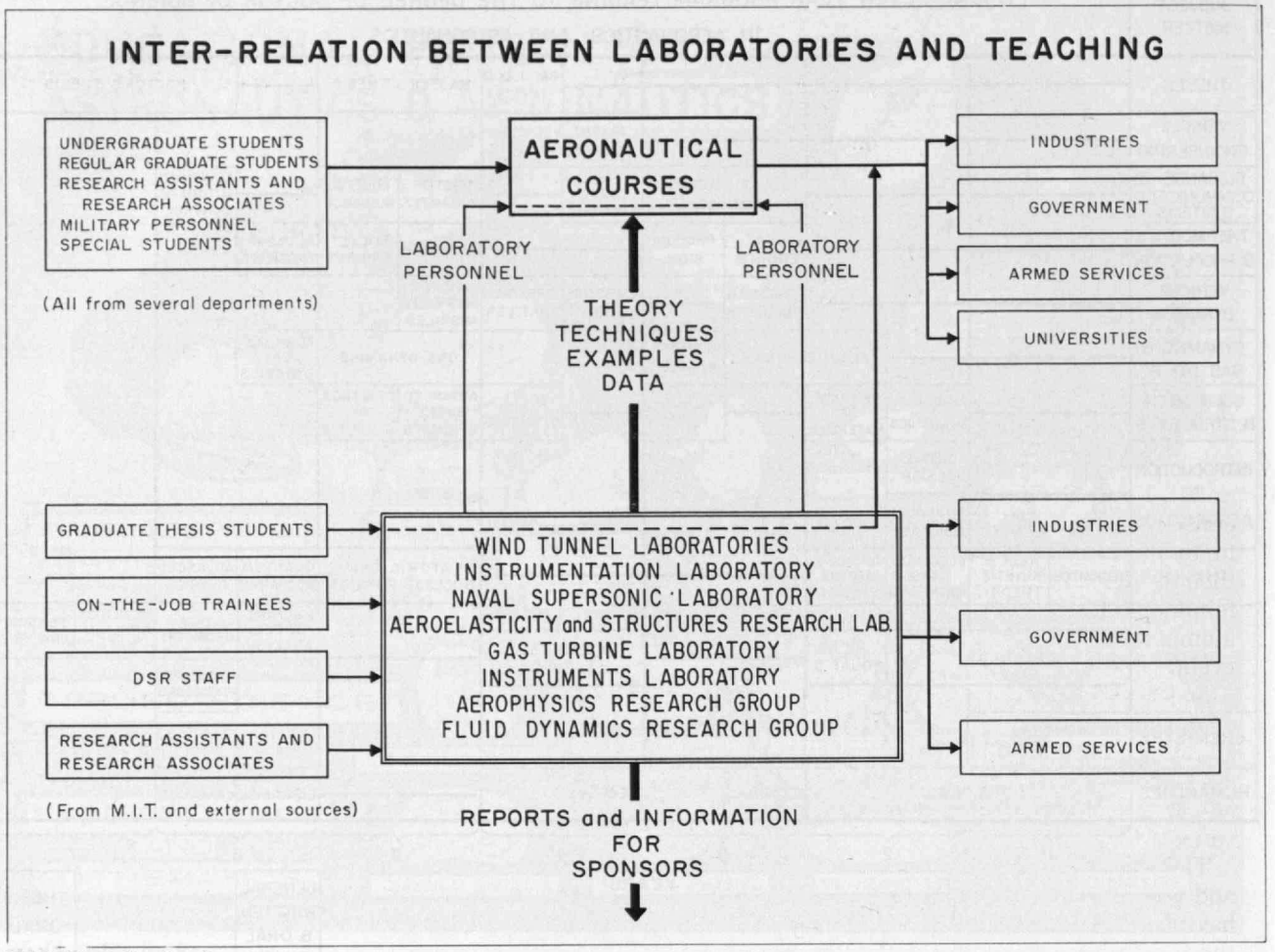
to any practical problem of engineering in science. Of course, such a diagram is intended to indicate the generality of the analytical method under discussion. But there is no reason why principles could not be illustrated by means of diagrams that illustrate principles – and do so by stimulating the student to think in terms of practical applications that are of the utmost importance to him. It has been our experience that the student quickly grasps the principles and can apply them to other problems when he is confronted by them.

COURSES DEALING WITH ASTRONAUTICS	
16.00	FLIGHT MECHANICS
16.064	THERMAL EFFECTS
16.066	HYPERSONICS AND SUPERAERODYNAMICS
16.07	AERODYNAMICS AND DYNAMICS OF MISSILES
16.392	ORBITAL VEHICLES
16.40	AUTOMATIC CONTROL OF AIRCRAFT AND MISSILES
16.47	ROCKET PROPELLED MISSILES
16.60	DESIGN OF LIQUID AND SOLID PROPELLANT ROCKETS
16.72	AERONAUTICAL ENGINEERING – MISSILE PROGRAM
16.74	ADVANCED (MISSILE) DESIGN
16.76	ORBITAL VEHICLES

M.I.T. Illustration Service

Fig. 4. Selected group of courses given at M.I.T. relating to astronautics. The list is by no means complete.

Figure 3 shows the topics of instruction now given within the Department of Aeronautical Engineering which contribute to the preparation of the astronautical engineer, and which are being used right now by many students in and out of the Department for just this purpose. The list of these subjects (Fig. 4) is by no means complete. There are gaps in such areas as astronomy, celestial mechanics, nuclear engineering, and space medicine. Some can be filled now or from subjects taught in other departments, but here at least is a beginning, and our students recognized it as such almost before we did. It is significant that Orbital Vehicles was first offered in 1953 by a faculty group ably headed by Paul E. Sandorff, '39, Associate Professor of Aeronautical Engineering. It had a registration of nearly 40 that first year. It has steadily grown and has attracted registrants from nearly every department in the Institute. This is desirable in itself, for it indicates as nothing else can, how interdependent are the various areas of knowledge which today's engineer and scientist must comprehend if he is to take his proper place as a leader in the practice of his profession. But from the point of view of the Department of Aeronautical Engineering, we were even more impressed with the caliber of the students registered in the course in Orbital Vehicles. Later classes included not only students in our own Department,



M.I.T. Illustration Service

Fig. 6. Relationships between teaching and research in the Department of Aeronautical Engineering.

but instructors and professors from other departments. The latter were men who attained competence in their own field, but were anxious to extend their learning and understanding into new areas so that their own work could become more significant and meaningful.

Figure 5 presents a typical program in aeronautical and astronautical engineering which has been laid out by the faculty primarily from subjects already being given. For five, six, or seven years of study, the programs illustrated in Fig. 5 lead to the S.M., A.E., and Sc.D. degrees.

It is significant that such programs draw on material taught in a dozen departments throughout the Schools of Science and of Engineering, as one would certainly expect of an "interdisciplinary" field like astronautics. Fortunately space vehicles represent a natural evolution of the light, very fast, complex devices which have been the concern of the aeronautical engineer, so that the course on Orbital Vehicles provides a ready-made, flexible framework around which the educational challenge can be met.

Figure 6 describes one final factor which we regard as essential to success in all the objectives I have outlined. This is the intimate relationship which exists between teaching and research at all levels in the Department. The research activities of our faculty and staff are manifold and far-reaching, especially in the fields of automatic control, aerodynamics, structures, and jet propulsion. Day by day all of our subjects of instruction, from sophomore aeromechanics to advanced graduate theory of hypersonic flow, draw on the research experience of the eight departmental laboratories. Undergraduates by the score and almost every graduate student in the Department find part-time employment in these laboratories, helping to ease their all-too-severe financial problems while seeing the principles they have learned being put to work. We are proud of the intense, continuing effort that is made to integrate teaching and research. It represents a first step in reinforcing the enthusiasm of the "space boy" by the more mature motivation of solving real, quantitative problems that daily face the aeronautical and the astronautical engineer.

Let me close with one thought: there is no single way to educate an engineer, just as surely as no one man can now compass all the fields of engineering. But the most successful ways are sure to be those which capitalize on the natural motivations and enthusiasms of students. If this can be done successfully – while providing balanced preparation in basic and applied science, general education, engineering science, and professional activity – then with the enormous reservoir of talent which we have to draw on in America today, we need have no fear that the engineering profession will fail to meet *any* of the multiple challenges of the fascinating future.

Reunion in Cambridge

Commencement comes as school year ends and "grads" return to make new friends

A TECHNOLOGY REVIEW REPORT

As a new crop of graduates takes its place to right the world's wrongs each spring, educational institutions all over the nation re-enact commencement exercises and play host to former graduates who return to their alma mater for periodic reunions. Despite their brilliant pageantry, there is something old and familiar about commencement ceremonies and alumni reunions. Yet each, in its own way, is a unique event.

So it was with reunion in Cambridge this year, with commencement exercises at M.I.T. on Friday, June 13, and Alumni Day on Monday, June 16. On both days the sky was clear, but brisk winds prevailed and canvas tents erected for the events were most welcome.

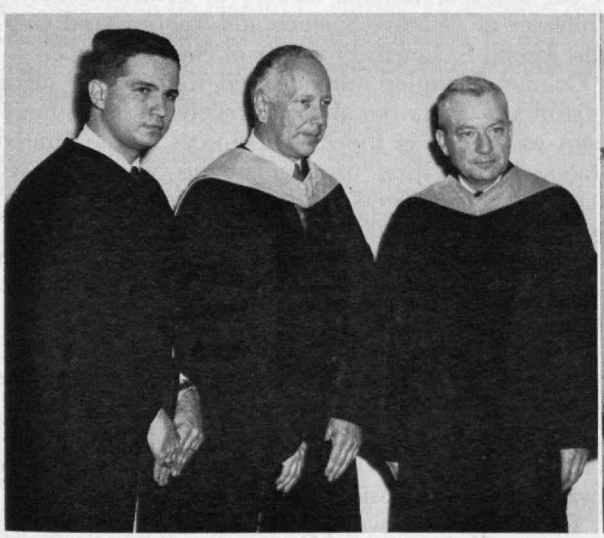
This year the Institute graduated 1,112 young men and women who received a total of 1,191 degrees. As has been the trend since the end of World War II, the Institute's graduate student body continues to increase percentagewise as well as in absolute numbers. This year 508 advanced degrees were awarded, representing almost 42 per cent of all degrees awarded. Further statistical information appears on page 499.

Alumni Day, 1958, was marked by serious concern for the nation's educational program. The morning symposium had for its theme "Education for a Changing World." At the luncheon, James R. Killian, Jr., '26, Special Advisor to President Eisenhower on Science and Technology, spoke on "Maintaining the Strength of U. S. Technology." In reporting to Alumni regarding the year at M.I.T., Acting President J. A. Stratton, '23, emphasized the progress being made in assuring that modern engineering education fills the needs of a technological society.

Senior Week Events

Senior Week ushered in a round of highly organized social events which culminated, for the graduates, with commencement exercises on Friday, June 13, and brought "old grads" back to the Institute on Alumni Day, Monday, June 16. The social events of Senior Week provided the last opportunity for the Class of 1958 to review and reminisce – in full strength – their years of study in Cambridge before taking up their responsibilities as professional participants in the world's work.

Acting President Stratton was the honored guest at the Senior Class Banquet, held in Rockwell Cage on the evening of Friday, June 6. The following evening, Saturday, June 7, members of the graduating class attended Symphony Hall where Arthur Fiedler con-



(Left) *Photographed in the Green Room of Kresge Auditorium just prior to the baccalaureate service are, in usual reading order: Robert E. Jordan, 3d, President of the Senior Class, who gave the Scripture reading; Chancellor Julius A. Stratton, '23, who gave the invocation; and Dean Harold L. Hazen, '24, who delivered the baccalaureate address reproduced on page 471.* (Right) *Those taking part in the R.O.T.C. commissioning exercises on June 12 were, from left to right: Admiral William E. Howard, Jr., '33; General Walter C. Sweeney, Jr.; General James McCormack, Jr., '37, Vice-president of the Institute; and General Alden K. Sibley.*

Following commencement exercises, an informal luncheon was held in the Great and Du Pont Courts. Head table guests were (left to right): *Evers Burtner, '15, Associate Professor of Naval Architecture and Marine Engineering, who retires as of July 1; Mrs. L. F. Hamilton; John J. Wilson, '29, President-elect of the Alumni Association; The Very Reverend Monsignor Francis J. Lally; Mrs. Vannevar Bush; H. Leston Carter, '08; Mrs. J. A. Stratton; James R. Killian, Jr., '26; Julius A. Stratton, '23; Vannevar Bush, '16; Mrs. J. R. Killian, Jr.; John J. McCloy, commencement speaker; Mrs. J. J. Wilson; Russell E. Walstedt, '58; Mrs. Evers Burtner; and Leicester F. Hamilton, '14, Professor of Analytical Chemistry, who retires as of July 1.*

ducted the Boston Pops Orchestra. Perhaps sentimentally inclined persons could find nostalgic significance in the published program whose last three numbers were: "June is Bustin' Out All Over," "Smoke Gets in Your Eyes," and "When Johnny Comes Marching Home."

On Sunday, June 8, Rowe's Wharf was the point of departure for those who chose to take a moonlight cruise around Boston Harbor, and a "Mystery Night" dance was held at Baker House on Monday, June 9. In somewhat more formal manner, the Annual Commencement Formal Ball was held on Tuesday, June 10, at the Bradford Hotel in Boston.

No events were scheduled for Wednesday, June 11; but most of the graduates were busy completing personal plans for the next two days, which included the Reserve Officers' Training Corps commissioning exercises in the morning on Thursday, June 12, and the baccalaureate service in the afternoon, both of which were held in Kresge Auditorium.

R.O.T.C. Commissioning Exercises

Commissioning exercises for the Institute's Reserve Officers' Training Corps were held at Kresge Auditorium at 10:30 A.M. on Thursday, June 12. Music was provided by the Needham High School Band, whose excellent performance matched that of previous years in which it has had a stirring role in M.I.T. military exercises. The ceremonies were opened with an invocation offered by Rabbi Herman Pollack, Religious Counselor at M.I.T. Greetings and welcome were extended to the assembled guests by Major General James McCormack, Jr., '37, Vice-president of the Institute, on behalf of President Killian, the M.I.T. Corporation, and the Institute Faculty.

A closer view of the right-hand end of the table, above, showing R. E. Walstedt, '58; Mrs. Evers Burtner; and L. F. Hamilton, scheduled to retire July 1. Members of the Tranquility Club at Walton's Restaurant (where the elite meet to beat the heat) are giving heavy odds that July 1 will make no difference in the schedule of the executive officer of the Department of Chemistry.

General McCormack also introduced the guest speakers representing the three branches of the nation's military service: Major General Walter C. Sweeney, Jr., Commanding General of the Eighth Air Force, Westover Air Force Base; Rear Admiral William E. Howard, Jr., '33, Commander, Boston Naval Shipyard; and Brigadier General Alden K. Sibley, Division Engineer, United States Army Corps of Engineers.

Representatives of the Armed Forces stationed at M.I.T. are: Colonel Harmon Lampley, Jr., Professor of Air Science; Colonel Gilbert G. Brinckerhoff, Jr., Professor of Military Science and Tactics; and Captain Joseph S. Lewis, Professor of Naval Science.

Colonel Lampley administered the oath of office to students who were about to receive their commissions as officers in the Armed Forces of the United States. Presentation of commissions was made to newly created officers of the Air Force by General Sweeney and to officers of the Army by General Sibley. The Naval R.O.T.C. unit was organized at M.I.T. only two years ago and has not had opportunity to award commissions.

Those commissioned at the exercises numbered 110 in all. The United States Army awarded commissions as follows: Corps of Engineers, 15; Signal Corps, 12; Ordnance Corps, 25; Chemical Corps, 24; Quartermaster Corps, 13. The United States Air Force awarded 21 commissions.

The ceremonies were concluded as the Needham High School Band played the "Star Spangled Banner," and the Reverend Robert C. Holtzapple, Jr., Religious Counselor at M.I.T., gave the benediction. After that, it remained only for the cadets to pin their bars on their shoulders and leave Kresge Auditorium with a new sense of responsibility.

Facing the camera, those greeting graduates and their guests on June 13 were: Dr. and Mrs. Killian; Dr. and Mrs. Stratton, barely visible; Dean John T. Rule, '21; Mrs. and Dean Frederick G. Fassett, Jr.; and Robert E. Jordan, 3d, '58.

Baccalaureate Service

Members of the graduating class, who had previously assembled in a double column in Briggs Field west of Kresge Auditorium, took their seats in the splendid auditorium at 3:00 P.M. on Thursday, June 12, for the baccalaureate service.

In the prelude, David Johnson at the Holtkamp organ played selections by Bach, Vaughn Williams, Buxtehude, and Franck. Members of the class filed in to Mr. Johnson's rendition of Richard Strauss's Festival Processional and Handel's Solemn Processional from the "Water Music Suite."

Acting President Stratton opened the services with an invocation. The audience then sang Martin Luther's hymn, "A Mighty Fortress is Our God," after which the Scripture reading was given by Robert E. Jordan, 3d, President of the Class of 1958.

The baccalaureate address, entitled "Zest for Living," was given by Harold L. Hazen, '24, Dean of the Graduate School. The Review is pleased to present this highly significant message to the graduating class on page 471 of this issue.

The audience joined in singing Daniel Robert's "God of Our Fathers," after which prayer and benediction were offered by Dr. Stratton. The exercises were concluded with recessionals by John Stanley and George Frederick Handel rendered by Mr. Johnson.

Commencement

While families and friends of the graduating class gathered at Rockwell Cage for commencement exercises, the graduates, members of the Faculty, Class of 1908, the Corporation, and guests of honor met in the Armory for robing, last-minute instructions, and the customary making of newspaper photographs.

This year's graduating class, 1,112 graduates, was the largest ever to be graduated from the Institute, and the Rockwell Cage was filled to capacity. In fact, an overflow group of several hundred persons witnessed the commencement exercises from the Kresge Auditorium, where a closed-circuit television apparatus was called into play to image events taking place in the Cage a few hundred feet away.

As guests congregated in Rockwell Cage, David Johnson, organist, played background music and the processional march music. At 10:30 A.M. the academic procession began, headed by the officers and marshal of the Class of 1958, followed by the Faculty, the Class of 1908, members of the Corporation, and guests of honor. John J. Wilson, '29, President-elect of the Alumni Association as chief marshal, had the honor of carrying, for the second time in the Institute's history, the gold-plated silver mace made by Leverett H. Cutten, '07.

When all those taking part in the academic procession had taken their places, the national anthem was sung. Vannevar Bush, '16, Chairman of the M.I.T. Corporation, opened the exercises, and the invocation was given by the Very Reverend Monsignor Francis J. Lally, editor of *The Pilot*.

Acting President Julius A. Stratton, '23, introduced John J. McCloy, Chairman of the Board of the Chase Manhattan Bank, who gave the commencement address. In his introduction of Mr. McCloy, Dr. Stratton said, in part:

"Out of the tremendous range of his accomplishments, let me recall to you his invaluable service as Assistant Secretary of War in the dark and difficult days of World War II. Then, you will remember that, as president of the World Bank, he gave effective guidance to the first efforts of this country to assist underdeveloped areas of the globe. And subsequently that as U. S. High Commissioner for Germany from 1949 to 1952 his responsibilities were enormous, and in that critical period he played a major role in bringing West Germany back into the family of democratic states."

Mr. McCloy's response was the stimulating and scholarly commencement address to the Class of 1958 which The Review is happy to bring to its readers, beginning on page 475.

Dr. Stratton then presented the Goodwin Medal to Donald L. Kreider, an instructor in the Department

At the Alumni Day luncheon, the left-hand portion of the head table included as honored guests: Robert E. Jordan, 3d, '58; Mrs. Gilliland; Mrs. Skinner; Professor Edwin R. Gilliland, '33; Mrs. Jordan; Mrs. Roddy; David W. Skinner, '23; Mrs. Karl Taylor Compton; Gilbert M. Roddy, '31; Mrs. Stratton; Dr. Killian; and Saxton W. Fletcher, '18, toastmaster.

of Mathematics. This annual award, established in honor of Harry Manley Goodwin, '90, first Dean of the Graduate School, is awarded to a graduate student member of the academic staff for conspicuously effective teaching. The medal and cash award not only serve as an annual reminder of the Institute's wholehearted interest in effective teaching but also pay tribute to one of the Institute's most effective teachers of former years. Five other graduate students and 20 undergraduate students were also listed in the commencement program as receiving awards.

Presentation of degrees was made by Dr. Stratton who was assisted by Pietro Belluschi, Dean of the School of Architecture and Planning; C. Richard Soderberg, '20, Dean of the School of Engineering; John E. Burchard, '23, Dean of the School of Humanities and Social Studies; E. P. Brooks, '17, Dean of the School of Industrial Management; and George R. Harrison, Dean of the School of Science. Harold L. Hazen, '24, Dean of the Graduate School, and Robert M. Kimball, '33, Secretary of the Institute, were investors of hoods for those receiving their doctorate degrees.

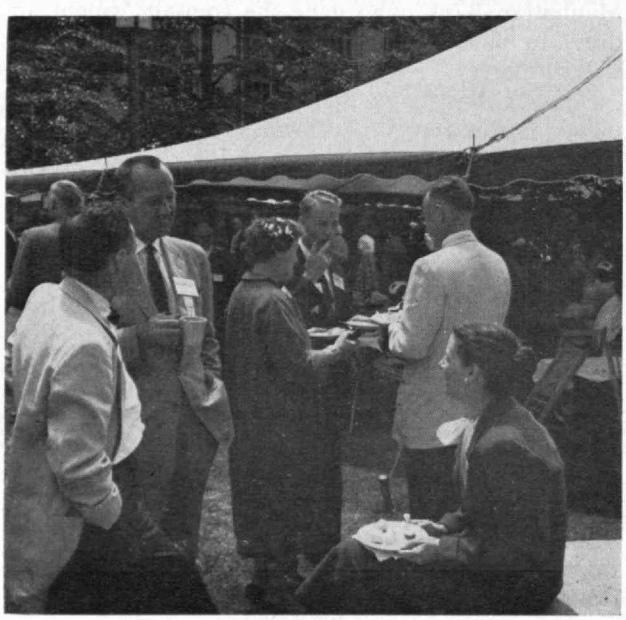
Upon the conclusion of the presentation of degrees, Dr. Stratton gave the charge to the graduates. In this leave-taking address, traditionally delivered by the Institute's acting head, Dr. Stratton said, in part:

"We live admittedly in a highly materialistic age, and that materialism is enhanced by the very success of science over the physical world. Within the few years that you have been in college, this success has been reflected in an extraordinary demand for scientists and engineers. It would be only human had you been influenced in part in your attitude toward education, and even in the very choice of your careers, by the lure of high salaries and special employment opportunities.

"But education has a deeper meaning than the immediate pay-off. So it is that in the brief time that you have spent with us here at M.I.T. we have hoped to prepare you not simply for this June of your graduation but for those fruitful years ahead when you will have achieved the full maturity of your profession. No one at this moment can possibly foresee the technical demands that may be imposed upon you 10, 20, or 40 years hence. The most sophisticated techniques of 1958 will most likely be as outmoded in 1970 as the 1920 crystal wireless set is today. An education which comprises merely the accumulation of technical data and a skill in the manipulation of formulas offers no real professional or economic security whatsoever. Accordingly, the philosophy that has guided all our efforts on your behalf has been designed to cultivate in you truly professional attitudes, modes of thought that are both analytical and creative, and a capacity to deal in fundamentals that we believe will survive all the vicissitudes of change.

"In sum, it is our view that the only professional security of any account will rest in your power to keep pace with the advancing frontiers of knowledge. In awarding you these academic degrees today, we express our confidence that you now possess that power. You will, however, retain it only so long as you yourselves continue to cultivate assiduously your own fields of learning. If ever you are to achieve your full potentialities, then education must not cease with the college, but must be carried forward through the entire period of your active lives.

"There came to me this morning a telegram from the President of the United States. Let me read it to



Informal chats in Du Pont Court are enjoyed by members of the Class of 1933.

Beginning at speaker's desk, left to right, at the Alumni Day luncheon are: Saxton W. Fletcher; Mrs. J. R. Killian, Jr.; Dr. Stratton; Mrs. H. E. Lobdell; H. Leston Carter, '08; Mrs. S. W. Fletcher; H. E. Lobdell, '17; Mrs. Holt Ashley; Morris Cohen, '33, with camera; Mrs. Morris Cohen; and Holt Ashley, '48.

you. 'Please give my greetings to all attending the Commencement ceremonies of the Massachusetts Institute of Technology, and my congratulations to the graduates of the Class of 1958.

" 'Those students receiving degrees from the Institute this June face opportunities and responsibilities of a vast new order. In the expanding world of science, following the superb example of their President, Dr. James R. Killian, they can contribute much to the strength of their countrymen and to free men everywhere.

" 'Best wishes and Godspeed to each one. Dwight D. Eisenhower.' "

The academic recession of the assembly followed upon conclusion of Dr. Stratton's address, while Mr. Johnson played the organ postlude. For some, it was the final ceremony at the Institute. But many others took part in the Commencement Day luncheon which was held under canvas in the Great Court.

From Far and Near

Students from all over the world as well as the United States were awarded diplomas this June. Of the 48 states, only South Dakota and Delaware claimed no favorite sons among those receiving degrees on June 13. Massachusetts, of course, is home state to more graduates than any other: 258 Bay Staters collected degrees, 51 of them from Cambridge and 19 from Boston.

Among the graduates were 136 foreign students from 76 cities in 37 countries. All six continents were represented. Students hailed from such faraway places as Tel-Aviv, Israel; Bangkok, Thailand; Budapest, Hungary; Seoul, Korea; Pretoria, Union of South Africa; Sydney, Australia; Teheran, Iran; Bombay, India; and Buenos Aires, Argentina. Several places with strange sounding names had native sons honored at graduation. Among them: Pierrelaye and Vaucresson, France; Torreon, Coahuila, Mexico; Grantown-on-Spey, Scotland; Goa, Portuguese India; Barranquilla, Colombia; Pattani, Thailand; Kitchener, Ontario.

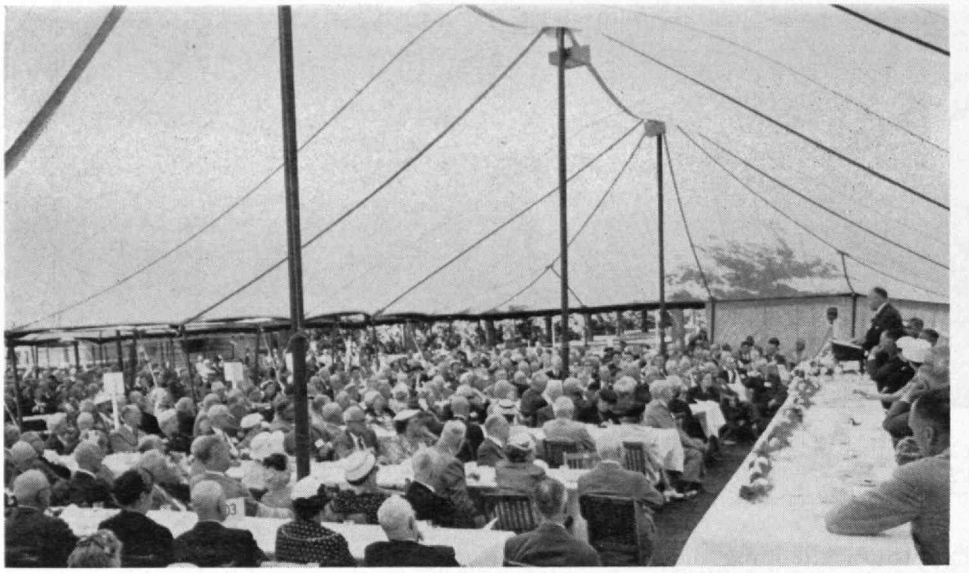
North from Mexico and South America to M.I.T. came 43 of the degree awardees; nearly two-thirds as many, 27, came south from Canada. Port Louis on the island of Mauritius is home to one S.B. recipient; Taipei, Taiwan, to a student receiving an S.M. degree. Granted to students from beyond our shores were 47 bachelor's degrees and 89 advanced degrees.

The commencement procession on June 13 included 1,112 candidates for a total of 1,191 degrees, plus about 70 people whose degrees were granted in September, 1957, or February, 1958, and who returned to the campus to collect them. By official count, M.I.T. awarded 693 bachelor's degrees, 370 master's degrees, 51 engineer's degrees, and 87 doctor's degrees at the 1958 commencement.

A few hard-working students received more than one bachelor's degree. Leading the list was William Dean Couper of Johnstown, Pa., who received an S.B. in Business and Engineering Administration at the same time he received an S.B. and an S.M. in Electrical Engineering.

The 115 people receiving Sc.D. and Ph.D. degrees (28 awarded as of September, 1957, or February, 1958) already hold among them a total of 202 degrees; 78 of these previous degrees are from M.I.T., and the other 124 are from 76 different colleges within and outside the country.

Several reuning Alumni and families of Alumni had a double reason for returning to M.I.T. for this year's commencement; the second, to see their son or daughter graduate from their alma mater. With the graduating offspring listed first and the parent afterward, they are: Edgar H. Bristol, 2d, S.B. VI, of Foxboro, Mass., and Benjamin H. Bristol'19, S.B. II; Miss Emilie Drew, S.M. XX, of Temple, N.H., and Thomas B. Drew'23, S.B. X and S.M. X-A; Lee B. Freese, S.B. I, of Fort Worth, Texas, and Simon W. Freese'21, S.B. IX-B; Carlyle L. Helber, Jr., S.B. III, of Forest Hills, N.Y., and Carlyle L. Helber'26, S.M. XIII-A; Alan C. Hurkamp, S.B. XV, of Hagerstown, Md., and Charles H. Hurkamp, Jr.,'27, S.B. II; Malcolm M. Jones, S.M. XIV, of Boston, Mass., and the late S. Murray Jones'21, S.B. and S.M. VI; William N. Latham, S.B. II, of Jamaica Plain, Mass., and Allen Latham, Jr.'30, S.B. II; Ralph E. Manchester, Jr., S.B. II, of Cambridge, Mass., and Ralph E. Manchester'29, S.B. II; Calvin J. Morse, S.B. II, of Peterborough, N.H., and Winslow C. Morse'22, S.B. XV; Miss Joanna M. Muckenhoupt, S.B. XVIII, of Newton, Mass., and Carl F. Muckenhoupt'29, S.B. VI, Ph.D. IX-C; Allen R. Philippe, S.B. I, of Alexandria,



From the head table at the Alumni Day luncheon, the Alumni gathered looked something like the view shown here. Several tents the size of that shown at left were required to protect some 1,400 Alumni and friends from sprightly June weather.

Va., and Robert R. Philippe'29, S.B. I; Charles C. Vicary, S.B. XV, of Erie, Pa., and James W. Vicary '33, S.B. XV; and Richard H. Wick, S.B. X, of Allentown, Pa., and the late Richard M. Wick'28, S.B. X, S.M. X-A.

To many persons who traditionally think of M.I.T. as a man's school, the coeducational character of its operations was emphasized as 19 young women received a total of 13 S.B. degrees, 2 S.M. degrees, and 4 other advanced degrees.

Commencement Luncheon

Graduates, with families and friends, had luncheon in the Courts adjacent to the main educational buildings.

Dr. Stratton spoke briefly to the graduates, and introduced those members of the Faculty who were retiring as of July 1.

H. Leston Carter, '08, representing the 50-year Class, reviewed changes that had taken place since his Class's "Boston Tech" days, and Russell E. Walstedt, '58, spoke of the Institute's humanities program and the value of such general education.

Finally, Dr. Killian admonished the graduates to "develop the subtle sense of the importance of running the race well" instead of aiming to win it.

Reunion of Class of 1933

As has been the custom in recent years, the 25-year Class held its reunion on the M.I.T. Campus where Baker House served as reunion headquarters and "home away from home." The Reunion Committee, under the chairmanship of Charles C. Bell, had worked hard to evolve an interesting program of events.

Registration of members of the Class of 1933 began Friday evening, June 13, and continued throughout all day Saturday, the 14th. No formal scheduled events occurred until the luncheon on Saturday, which was held in Walker Memorial. Leicester F. Hamilton, '14, Professor of Analytical Chemistry, who retired from the Institute this year, presided. At 2:30 the Class was photographed on the steps of Walker Memorial. Later in the afternoon, the informal program included sailing on the Charles River, swimming in the Alumni Pool, and tennis. Between 6:00 and 7:00 P.M. a social hour was held at the Faculty Club lounge.

The 25-year Reunion Banquet was held in the main dining room of the Faculty Club. President and Mrs. James R. Killian, Jr. ['26], Mrs. Karl T. Compton, and Professor and Mrs. B. Alden Thresher ['20] were special guests on this important occasion.

After breakfast on Sunday morning at Baker House, members of the Class of 1933 could attend either Catholic or Protestant church services at the M.I.T. Chapel.

A New England shore dinner was held at Castle Hill, Ipswich, where there was also opportunity to tour the Crane Estate. Busses left Cambridge at 11:00 A.M. and headed classmates back to Baker House from Ipswich by 4.30 P.M. A buffet supper and informal program was planned for the evening's activities at Baker House.

On Monday, the Class of 1933 joined hundreds of others in the general Alumni Day program.

Alumni Day — Registration

Alumni, 1,400 strong, registered in the lobby of the new Rogers Building or picked up their tickets for the day's events. All told, this was the largest Alumni Day on record, with an attendance of 1,400 at the Alumni Day luncheon, and 1,265 staying for the Alumni Day banquet and Pops Orchestra.

Education for a Changing World

The morning symposium was selected to deal with the topic of "Education for a Changing World." Gilbert M. Roddy, '31, President of the Alumni Association, presided at the symposium.

Morris Cohen, '33, Professor of Physical Metallurgy, spoke on "Soviet Education – A Lesson for America," which The Review is pleased to bring to its readers (page 483). In October, 1957, Dr. Cohen participated in a scientific mission to the Soviet Union and had opportunity to visit universities and

research institutes in Moscow, Leningrad, and Sverdlovsk (Siberia). He was in Moscow when the world's first satellite was launched. Dr. Cohen devoted particular attention to a study of the educational system of the Soviet system, and his Alumni Day symposium address is based, in large measure, on this first-hand experience.

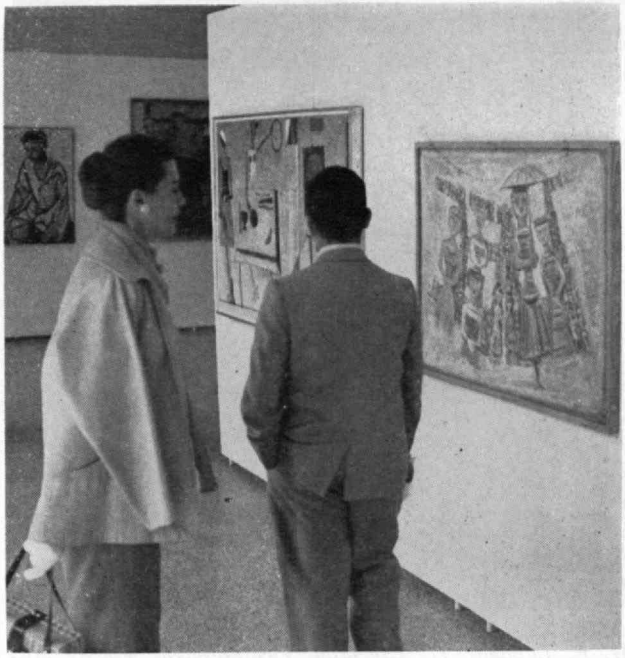
Edwin R. Gilliland, '33, Professor of Chemical Engineering, brought the problem of education closer to home in his symposium address, "Research in Undergraduate Engineering Education." Dr. Gilliland is chairman of an M.I.T. Committee on Engineering Education, whose assignment is to study the future of the undergraduate program in engineering at the Institute. His Alumni Day address, reproduced on page 489, reviews several educational experiments which are being considered for use on a small scale.

Holt Ashley, '48, Associate Professor of Aeronautical Engineering, discussed "Astronautics – A Challenge in Engineering Education." Professor Ashley believes that a new kind of student is making his appearance in freshman classes at the Institute – a young man fascinated by problems of high-speed flight, space travel, and astronautics. The challenge of educating such a group of young persons is primarily one of using this intense interest as a springboard to provide the student with the broad fundamental background he needs for fullest achievement of his ambitions, while serving the vital future interests of the free world. Dr. Ashley's address, which appears on page 491, provides answers to some of these questions as they emerge in the Department of Aeronautical Engineering.

Alumni Day Luncheon

As graduates and their friends had done on the previous Friday, Alumni gathered under canvas in the Great Court for the largest Alumni Day luncheon on record. After all had served themselves, Saxton W. Fletcher, '18, turned the meeting over to Dr. Stratton for the customary annual report on the status of the Institute, the first to be delivered by Dr. Stratton as Acting President of the Institute. The full text of this address is given on page 482.

Coats or jackets were required attire on Alumni Day, for brisk winds made the day seem chilly despite sunshine.



Among the exhibits on display was a group of modern paintings in the Charles Hayden Memorial Library which, as the saying goes, "must be seen to be appreciated."

Upon conclusion of Dr. Stratton's address, Mr. Fletcher called upon Dr. Killian who, as Special Assistant to President Eisenhower for Science and Technology, spoke on the outlook for science and technology in America. He outlined the type of balanced program the nation should seek and the proper place which science and technology should be expected to play in the daily lives of the citizens of this country. Full text begins on page 479 of this issue.

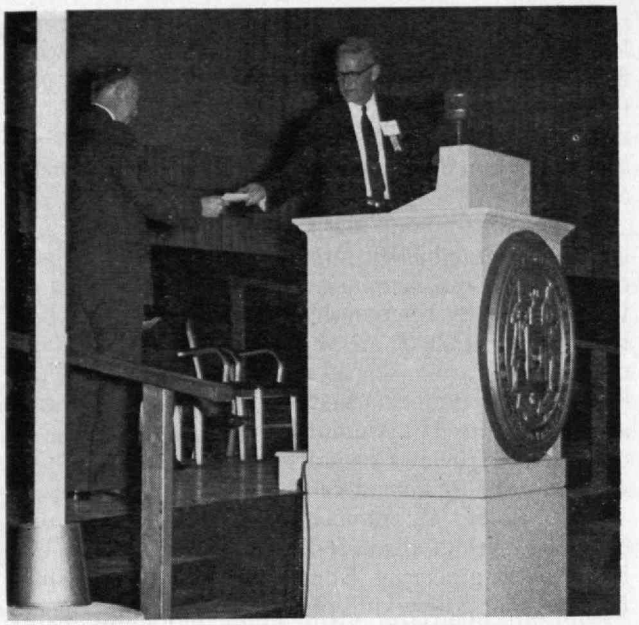
Demonstrations and Exhibits

Six major areas were open for inspection during the afternoon: the nuclear reactor, just nearing completion; the Computation Center, first on display a year ago; demonstration of inertial guidance; an exhibit on a new approach to the teaching of high school physics; a demonstration model of the M.I.T.-Harvard six-billion-electron-volt synchrotron now under construction; and an exhibit of postwar modern Italian painting.

Social Hour

Despite high wind – as may be judged from illustrations showing the way in which flags and banners stood out from their masts – nearly all who attended the Alumni Day banquet gathered on Briggs Field, between Kresge Auditorium and the Rockwell Cage, for an hour of sociability. Alumni and their wives could meet old acquaintances or make new ones, discuss the future of M.I.T., or reminisce about their student days.

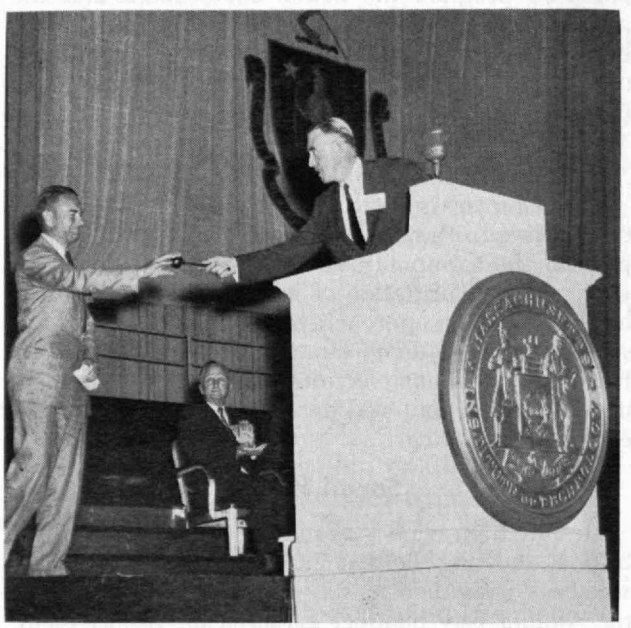
H. E. Lobdell, '17, Executive Vice-president, escorts Miss Madeline R. McCormick from the stage of Rockwell Cage. Miss McCormick, Assistant Treasurer of the Alumni Association, and a member of its staff for nearly four decades, was made an honorary member of the Alumni Association on June 16. The principals and Chancellor Stratton seem pleased.



Acting President and Chancellor of M.I.T., J. A. Stratton, '23, receives check from the 25-year Class from Richard S. Morse, '33. A few minutes earlier, Harold S. Osborne, '08, had also presented a check to Dr. Stratton as gift of the 50-year Class. This ceremony has become a traditional event at M.I.T. Alumni banquets since the Alumni Fund was initiated in 1940.

Alumni Day Banquet

After the social hour, Alumni walked leisurely to nearby Rockwell Cage, where the Alumni Banquet got under way at 6:15 P.M. As is customary, seating was by classes, with the earlier classes nearer the stage. As usual, the 25-year Class had a large delegation on hand to wind up its reunion, which was held "on campus" as already noted. After a catered roast-beef dinner, provided by H. J. Seiler Company, a brief business session was held, at which Association President Gilbert M. Roddy, '31, presided.



Gilbert M. Roddy, '31, President of the Alumni Association for 1957-1958, receives gavel from President-elect, John J. Wilson, '29, whose presidential term began July 1, 1958. Dr. H. O. Osborne applauds the ceremony which, incidentally, concluded the Alumni Day banquet.

Mr. Roddy requested H. E. Lobdell, '17, to escort Miss Madeline R. McCormick to the stage to receive felicitations of all those present, as well as a certificate of honorary membership in the Alumni Association. In his tribute to Miss McCormick, who is assistant treasurer of the Alumni Association, Mr. Roddy said that "a young, auburn-haired lady" came to Tech to do the accounting for the Educational Endowment Fund 39 years ago. "Fortunately for us, [she] remained at the Institute to keep the finances of the Alumni Association steadily 'on the rails.'" As Mr. Roddy transferred the certificate of honorary membership, Mr. Lobdell presented Miss McCormick with a bouquet of 39 American Beauty roses – one for each year of service.

Mr. Roddy then called upon Harold S. Osborne, who presented the gift of the Class of 1908. Dr. Osborne announced that his Class had raised the sum of $170,923, a portion of which has been designated as a contribution to the Faculty Salary Fund. Counting this portion of the Class gift, matched in part by Alfred P. Sloan, Jr., '95, Dr. Osborne stated that the gift of the Class of 1908 could be reckoned as amounting to $195,838.

Richard S. Morse then presented the gift of the Class of 1933, recalling that since the Alumni Fund was organized in 1940, the Class had contributed $352,790.70. Mr. Morse also reported that he had a check for $85,867.88 as the gift of his Class on their 25th anniversary.

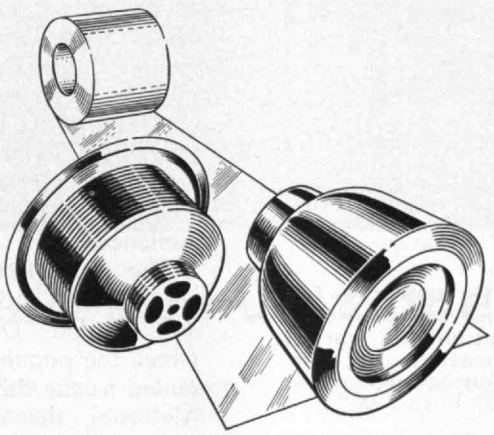
As his last presidential duty, Mr. Roddy reported that 13,102 Alumni had contributed to the Alumni Fund during his term of office and that the amount given to the Institute through Alumni amounted to

(Concluded on page 504)

BUSINESS IN MOTION

To our Colleagues in American Business . . .

Although miles apart in their functions the door knob and sink strainer shown below have one thing in common. Both are made from Revere Brass Strip. Revere Leaded Brass Strip was used to make the sink strainer because of its deep drawing characteristics (strainer had to be drawn from .065″ gauge x 7″ strip to a 2½″ depth), the ease with which large diameter threads are machined, the excellent surface it develops for chrome plating and, of course, the inherent corrosion resistance of brass.



The Revere Brass Strip used by the manufacturer of seamless, one-piece door knobs possessed still other characteristics that made it the most desirable for that specific purpose. Because of the unique procedure by which these knobs are made the brass has to be able to stand up under some mighty rugged going. Further, the brass strip has to be of uniform gauge and be without any sign of fracture or crimping when drawn, as well as have consistently correct grain structure to insure a smooth, flaw-free surface on the finished knobs without extensive finishing and polishing operations.

These are but two of the literally thousands of ways Revere Brass Strip makes it possible for manufacturers to offer *their* customers a superior product at the lowest possible cost.

The combination of unusual properties makes Revere Brass Strip, in various anneals and tempers, equally suited to stamping and spinning. Manufacturers have found that the high ductility and malleability of various Revere Brass Alloys effect savings in time and cost because deeper draws in one operation are possible. And, because of the low, work-hardening rate, a combination of forming processes is frequently possible in making intricate shapes without the need for intermediate annealing. Should annealing be required the temperatures used are low (usually not over 1100°F.) which means lower fuel cost.

Revere Brass Strip not only permits deep draws, but fast draw speeds as well, which is particularly desirable for repetition press work or other operations where parts are produced in large quantities. This means relatively low power consumption.

Revere Brass Strip does not foul dies quickly, requiring only a minimum of die re-dressing. And one of its most desirable features is that it plates well and polishes easily, requiring only a minimum of finishing.

Revere Brass Strip in its various alloys is still another example of how, by fitting the metal to the job, it is possible to produce superior products at the lowest possible cost.

Practically every industry you can name is able to cite similar instances. So we suggest that no matter what your suppliers ship you, it would be a good idea to take them into your confidence and see if you cannot make a better product at lower costs by specifying exactly the *right* materials.

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REUNION IN CAMBRIDGE

(*Concluded from page 502*)

two and a quarter million dollars. Finally, Mr. Roddy called upon John J. Wilson, '29, to come to the rostrum and assume his duties as president of the Alumni Association for the year beginning July 1, 1958.

Mr. Wilson took office from Mr. Roddy and presented a handsome gavel to Mr. Roddy to mark the completion of his term of office. The gavel was used in declaring the meeting adjourned, and those present marched across Briggs Field for the Pops Orchestra Concert to be held in Kresge Auditorium.

Pops Orchestra Concert

With every seat in the Kresge Auditorium taken, promptly at 8:30 P.M. the Boston Pops Orchestra – with Arthur Fiedler conducting – began its second Alumni Day concert to be held on campus. The program, marking the 47th program of the current season, was in three parts. The first portion included: "Rakóczy March" by Berlioz; "Suite from 'Cakewalk'" by Kay; "March of the Little Lead Soldiers" as an encore; "Im Krapfenwald'l, Polka" by Strauss; "Hoe Down Rodeo" as the second encore; and "Suite from 'Gaite Parisienne'" by Offenbach.

After intermission Maro Ajemian joined the orchestra in Khachaturian's "Concerto for Piano and Orchestra." Miss Ajemian gave a brilliant and flawless performance, as did the orchestra, although the concerto was probably a bit too modern for the audience.

The final portion of the program included excerpts from various dances arranged by Hayman and entitled "Dancing Through the Years," after which the popular "Colonel Bogey March" was presented as the third encore. Following "Serenata" by Anderson, the orchestra played "Gypsy Tango – Jealousy" as its fourth encore, and followed this with "76 Trombones, from 'The Music Man'" by Willson. For the concluding selection, Arthur Fiedler and his musicians rendered the "Stein Song," as members of the audience rose to their feet to "Give a rouse, then, in the May-time." Thus was the day brought to a successful conclusion.

Finis

As the audience left Kresge Auditorium, the floodlighted Rogers Building greeted them across the mall. Many searched out their cars from the nearby parking lots and returned to their hotels or began the long trek back to their homes in cities across the nation. For those who did not drive, busses were waiting to take passengers toward Harvard Square or, in the opposite direction, to Massachusetts Station in Boston. Tech Alumni are probably an affluent lot, for there were few who patronized the Massachusetts Transit Authority orange and yellow vehicles. Perhaps they were dissuaded by the hawking taxicab drivers who were able to park fairly close to the Auditorium.

Thus did the reuning Alumni melt into the night, firm in their conviction to return again soon.

Venus, in blue light. 200-inch Palomar telescope.

SPACE FLIGHT and NUCLEAR PROPULSION

A drastic reduction in vehicle mass ratios... substantially increased specific impulse values... a capability for achieving very high speeds... these are some of the significant advantages that will come from the application of nuclear energy to space flight.

A number of different propulsion systems have been proposed to utilize nuclear reactions. The simplest system consists of a fission reactor through which the propellant is passed, heated, and then expanded through a rocket nozzle. Fission reactors can also be employed as a source of energy to generate electric power, which in turn can be used to accelerate ions or charged particles, or to create and accelerate a plasma. And fusion reactors, when developed, can be used to generate electric power for the same purposes. In addition, in the case of the fusion reactor, there is the attractive possibility that the reaction energy can be used directly without conversion to electric power.

The fission-powered thermal propulsion system will probably constitute one of the next major advances in space technology. As an example of the gain which can be achieved, consider a vehicle with a payload weight of about 25 tons for a manned flight to one of the nearer planets, landing, and returning. Powered by chemical rocket engines, the takeoff weight for such a vehicle would be 50,000 tons. But powered by a fission-thermal propulsion system, weight at launch would not exceed 500 tons... a 100-fold reduction in the mass ratio. Considerably greater gains are predicted for the more advanced systems.

Systems studies and advanced research in the application of nuclear energy to the requirements of space flight are in progress at Space Technology Laboratories. This work illustrates the emphasis at STL on the exploration and development of new concepts and techniques in ballistic missile and space technology.

Both in support of its over-all systems engineering responsibility for the Air Force Ballistic Missile Program, and in anticipation of future system requirements, STL is engaged in a wide variety of analytical and experimental research. Projects are in progress in electronics, aerodynamics, hypersonics, propulsion and structures.

The scope of activity at Space Technology Laboratories requires a staff of unusual technical breadth and competence. Inquiries regarding professional opportunities on the STL Technical Staff are invited.

SPACE TECHNOLOGY LABORATORIES

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ZEST FOR LIVING

(*Continued from page 474*)

derstand even superficially, what goes on in a drop of water from a stream or pond, has opened before him a vast new world. Then, inviting exploration at our very doorstep are the wealth of flora and fauna, with all their variety and beauty, their complex life histories and their fascinating interrelations. An exciting personal adventure awaits him who explores these great manifestations of nature and who thus qualifies himself to experience vicariously with the biologist, his thrill at each new discovery.

In another great realm, that of human affairs, let us glance at history. This field is so immense and rich that the professional historian himself may aspire to expertness only in a particular phase, or in a limited period and area. Yet each of us may reasonably aspire to an awareness of the sweep and patterns of known history, including the often-ignored East, as well as the West. As mentioned earlier, such an awareness of the major epochs and movements in history helps us to place in perspective the day's news as it comes to us from all parts of the globe, and from cultural and historical settings remote from our own. We also become prepared to share the thrill of the archeologist's discovery as he enlightens us about great past civilizations.

Then there is the appeal of the fuller understanding of a particular place or period in history that complements and illuminates the broad sweep. I hope that those of you who were exposed to our first-year Humanities' program discovered something of the satisfaction derived in developing such a fuller understanding. I hope also that you will frequently subject yourself, and succumb to, the temptation to read, and read widely, among the wealth of fascinating materials old and new that tell us of the story of man.

If one has or makes opportunity to travel, and I urge that you do make opportunity whenever you can, such background reading enriches immeasurably one's ability to see and perceive. Travel itself can be an extremely educational and stimulating experience. Yet I have seen too many people "on tour" utterly unaware and bored among some of the most fascinating opportunities. Travel can disclose utterly different sets of values and cultural patterns that sometimes necessitate radical revision of one's concept of his own country and countrymen. But whether attained by actual travel or by reading in one's own living room, understanding more of the great story of mankind can add greatly to zest for living.

Then there is the vast field of human feeling, ideals, aspirations, interpretation of life, that has led to almost infinite riches in the fine arts. It borders upon sacrilege to mention these so summarily, but within the realms of literature, painting, sculpture, music, architecture, are rich expressions of the human spirit beyond number. These are freely open to all who will but study and seek to understand. Through them one may share some of the deepest experiences of men.

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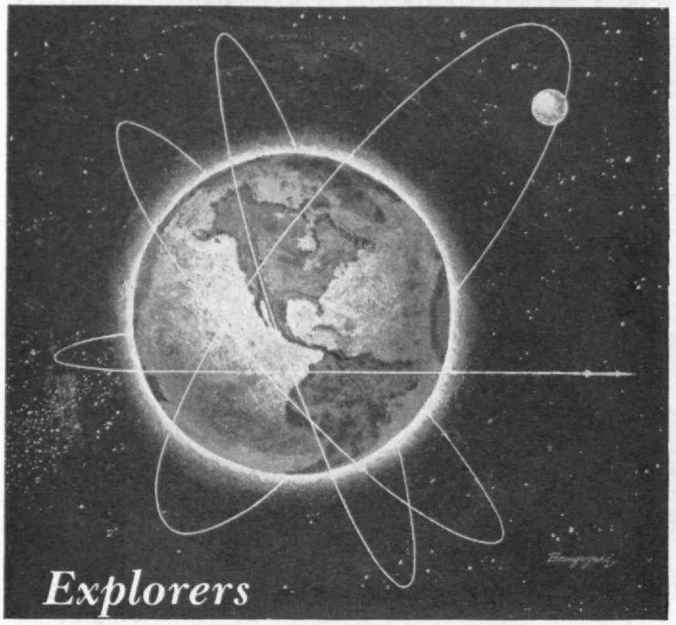

into the space age

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Name	Degree & Course	Year	Position
Oiva R. Anderson	SB, XVI SM, XVI	1947 1948	Senior Engineer
Martin Annis	SB, VI PhD, VIII	1944 1951	Chief Project Scientist
Robert P. Bartlett	SB, VI	1955	Research Engineer
Wallace P. Boquist	SB, IX-A	1954	Research Physicist
Roland J. Boucher	SM, XVI	1939	Staff Meteorologist
Claude W. Brenner	SB, XVI SM, XVI	1947 1948	Chief Project Engineer
William B. Bryant	SB, XVI ScD	1943 1955	Senior Engineer
Jack W. Carpenter	SB, SM, VI-A PhD, VIII	1951 1957	Senior Physicist
Arthur B. Cicero	SB, II SM, II	1953 1954	Senior Engineer
Carolus M. Cobb	SB, V PhD, V	1944 1951	Senior Chemist
Daniel J. Fink	SB, XVI SM, XVI	1948 1949	Chief Engineer
Gilbert Fryklund	SB, XVI	1957	Research Engineer
Arnold H. Glaser	ScD, XIX	1952	Chief Project Scientist
Lawrence E. Golden	SB, XVI-A SM, XVI	1952 1953	Staff Engineer
William D. Green, Jr.	SB, II SM	1943 1949	Chief Project Engineer
David C. Knodel	SB, XVI SM, XVI	1947 1951	Senior Engineer
Lawrence Levy	SM, XVI	1948	President
Philip Marshall	SM, II	1955	Staff Engineer
James J. McInnis	VI	1959	Research Engineer
Roger W. Milligan	SB, XVI	1950	Staff Engineer
Arthur C. S. Roberts	SB, XVI	1947	Senior Engineer
Leopold J. Rossbach	SB, SM, VI-A	1950	Senior Engineer
John N. Rossettos	SB, XVI SM, XVI	1955 1956	Research Engineer
Melvin R. Rubin	SM, I	1951	Staff Engineer
Richard Rubino	SB, XIV	1952	Personnel Manager
Frank Scherb	SB, VIII PhD, VIII	1953 1958	Staff Physicist
Charles M. Shure	SB, XVI	1957	Research Engineer
Calvin Y. Sing	SM, XVI	1954	Staff Engineer
Robert B. Smith	SB, IX-A SM, XIX	1944 1951	Research Meteorologist
Thomas B. Smith	SB, VI	1955	Staff Engineer
John Stewart	SB, XVI	1953	Staff Engineer
Robert A. Summers	SM, XVI ScD, XVI	1946 1954	Chief Project Engineer
Raymond Wexler	SM, XVI	1939	Senior Meteorologist
Ann C. Wilfert	SB, VIII	1953	Research Physicist

ZEST FOR LIVING

(*Concluded from page 506*)

But apart from and in addition to such creative works of men, individual people themselves offer a boundless source of new insights and interest in life. How seldom do we develop the full potential of opportunities for exchange of thoughts and experiences in our day-by-day associations with others who have seen, thought, studied, worked, and lived in realms different from our own. The rewards of serious conversation, or of merely friendly talk on interesting ideas, will always be cherished by the inquiring mind.

I am barely suggesting tremendous areas for opening up new interests and for cultivating verve of mind and spirit. Obviously one individual can explore only a small fraction of these areas. Yet each of us can, if he will, continually grow in catholic awareness, in sense of proportion and perspective, in his scale of values, thereby immeasurably enhancing his life and experience. And despite the seeming hurry, pressure, and urgency of daily duties, let us occasionally withhold from other commitments and guard as great treasure the time and energy for thought and reflection on all these matters that contribute so much to our zest for living.

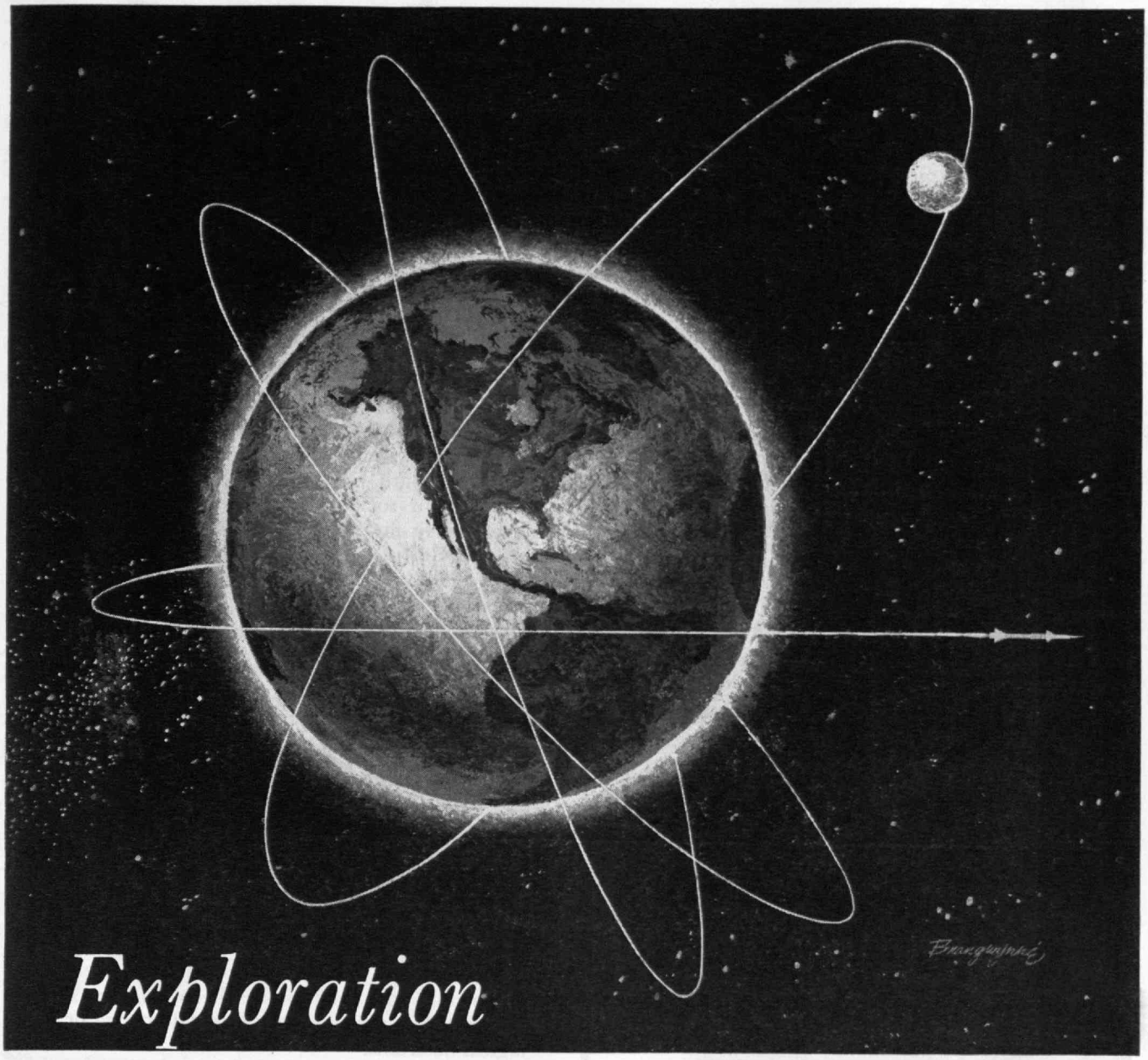
The thoughts I would leave with you are these. Life lived actively rather than passively seems good. Instinctively we feel that zest for living is good. This spirit comes partly from vigor, competence, courage, and productivity in our professional life, but partly and importantly from an enthusiasm for awareness and understanding, sympathetically and actively developed among all of the great areas of human endeavor. To him who has genuine curiosity and interest in the people and the world about him, life can never be dull. It will be full, full of the zest for living.

SOVIET EDUCATION

(*Concluded from page 488*)

us more satisfaction. The possible consequences are so far reaching that, like national security, we can no longer rely upon each local community to recognize, let alone meet, its share of the challenge. Federal resources must be directed into this all-embracing form of capital investment. Of course, any massive preparation for the future, even like the construction of vast underground shelters and the dispersal of cities, is bound to be fraught with waste and inefficiencies. However, there is a high probability that, considering the long-term aspirations of mankind on this globe, "putting our money on education" will have turned out to be the most rewarding insurance that we could possibly buy in our generation.

We are fortunate, indeed, to enjoy such a commanding head start over the Soviet Union in wealth, experience, productivity, standards of living, and freedom of inquiry. If we will respond to the lesson before us — to cultivate the brain power of our people by starting seriously with the education of our youth — we need not fear our rendezvous with destiny.



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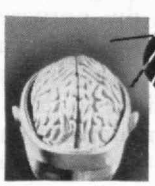

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MAINTAINING THE STRENGTH OF U.S. TECHNOLOGY

(*Continued from page 481*)

have a far greater chance of producing great scientists in the United States if we have a more widespread understanding of science.

With its growing complexity and responsibility and external challenge, American society today presses hard on the total creative and intellectual resources of its people. This means that we must find and develop the highest possible percentage of our native high talent; it also means that we must encourage each individual to achieve to the very highest degree the special excellence that he possesses.

We must also be concerned with the attitudes, values, and motivations which have given vigor to our technology and which are important to its continuing strength.

So far our society has demonstrated a sustained eagerness to find better ways of doing things. We have forged ahead because we wanted things to change. The revolution of modern man – the revolution which has found its fullest expression here in the United States – lies essentially in this: it is a revolt against things as they are when there are ways of doing things better. It is a revolution based upon determination rather than determinism, upon constructive discontent rather than disruptive discontent. It is a revolution against all the forces which hinder man in building a better life. Science has had a major part to play in shaping this basic American faith in creative change and improvement.

The course of our nation has been deeply affected by the tenet, very early embraced, that nature could be put to work for the benefit of man and that it is possible to wrest from nature a range of benefits to meet the needs of our people – that science and technology provide a means to advance the welfare of our people and that this has been a better way to progress than through radical social change or ideological nostrums.

I do not suggest that we have any warranty, expressed or implied, that progress is inevitable or immutable; I only describe the deep-rooted American belief that progress is an achievable and worthy goal. I reflect my own intuitive belief that man has the capacity greatly to improve himself and his society, and that pessimism and *status quo*itis are deficiency diseases of the human spirit.

Today we hear voices of doubt and pessimism, decrying or questioning the concept of progress. The increased currency of such phrases as the "illusion of progress" and the "corrosive effect of materialism" reflect an array of attitudes challenging the power of reason and the actuality of progress. Technology and science are attacked as contributing only to the convenience and comfort of life and not to its quality. In mentioning this attitude of doubt and pessimism, it is not my purpose to debate the theological or philosophical considerations on which they rest. My purpose is to express my contrasting faith that we can continue to draw the blueprints of a still nobler society, materially and spiritually, and that we can

(*Concluded on page 512*)

MAINTAINING THE STRENGTH OF U.S. TECHNOLOGY

(*Concluded from page 510*)

direct our advancing science and technology toward the realization of those plans.

If research is to continue to flourish and to give vigor and growth to our economy, these traditional American beliefs in the validity of progress and creative growth become increasingly important. They are the wellsprings of that zest and audacity which characterized our research and economy in the past and, God willing, will characterize them in the future.

With these examples of some of the opportunities and problems facing us, let me emphasize the great responsibility which rests upon science today in the light of the extraordinary opportunities which it has been given to participate in the formulation of national policy. The growing linkage of science and technology with government demands of science a new order of poise, steadiness, and statesmanship. The current emphasis on science, if it is not to cause reactions adverse to science, also requires of the scientific community restraint, humility, and a sense of proportion. It requires of scientists a recognition that science is but one of the great disciplines vital to our society and worthy of first-rate minds, a recognition that science is a partner – sharing and shouldering equally the responsibilities which vest in the great array of professions which provide the intellectual and cultural strength of our society.

These needs and objectives for furthering our national technological effort are drawn from the Agenda of the President's Science Advisory Committee. It is, of course, concerned with many additional things, including many classified aspects of our military technology, the better distribution of scientific information in the United States, and the furtherance of cooperative scientific activities throughout the free world. Pursuing all of these objectives, the committee is impressed by the urgent importance of enlisting more first-rate people from the scientific, engineering, and industrial community to help in solving these great national problems. We will not make adequate headway in solving them without participation of many men of imagination and vigor in public service. One of the heartening things to me about my experience in Washington has been the extraordinary response which we have already found among the scientists of the country in coming to Washington to help. Not a single scientist who has been asked to participate has failed to respond, but there must be many more if we are to achieve qualitative goals in our national policy-making and our national efforts in the field of science. And so I say "Be ye doers of the word, and not hearers only."

In setting forth these special requirements and opportunities for an advancing science and technology, I am also expressing my faith in the growing opportunity of science, not only to deepen our understanding and enlarge our views of the world, not only to enhance our sense of beauty and order, not only to augment our power and wealth, but also to minister humanely, benignly, and responsively to the needs of our fellows, our government, and our country.

OBLIGATIONS OF THE SCIENTIST

(*Continued from page 478*)

have to be foregone, but it might be that, in the end, a more satisfying, knowledgeable, and worth-while destiny would ensue.

To speak of what we need to do is not to detract from what we have nobly done. As history goes, we need apologize to no one for the contributions we have made to the world's progress. We created new and broadening political institutions and have made them work. We were the originators of the greatest revolution in terms of freedom of thought and action that the world has ever experienced. Though we, as de Tocqueville said, did develop in the shade, when finally we blossomed we gave mankind a concept of liberty that, in spite of all the attacks upon it, has by no means run its course. We intervened decisively in two world wars to quell aggression against our friends and against freedom itself, and we have contributed a larger amount of our wealth to the succor, rehabilitation, and development of mankind than has any other nation since the dawn of history.

In view of the record and the relatively short period of our involvement, I do rather rebel at the suggestion that either in respect of this hemisphere or elsewhere we have taken the world for granted.

It is necessary, however, that we look straight into the face of our challenges, appraise their size and weight, and act resolutely. It will not do merely to meditate on our meritorious past or to assume that somehow victory will crown our shield. Whether as individual or as nation, destiny has a way of sooner or later presenting us with a competitor worthy of our size and strength. The United States now has the Soviet Empire facing it, which bids fair to supplant this country in the eyes of the undeveloped people of the world as the hope for the future. It is in these countries, where freedom is competing with hunger for a decent life, that a totalitarian regime appears attractive as a short cut to economic progress.

I think we have to admit that we have recently been caught off-balance. The Russian scientific advances certainly did just this. It now appears that we shall have to face a real and ominous economic offensive. We have passed the time when we can afford only to respond to the Communist initiatives. We must now re-examine our objectives, both at home and abroad, and lay out a definite and well-enunciated program of achievement of our own. It involves much more than government action — though government must give a certain leadership. Our educational system must be greatly improved — our youth must be reinspired to the need for their participation in the achievement of the objectives; the scientist and technician must emerge from their laboratories and offices, and the businessman must seek his interests in a larger perspective than has heretofore been his instinct.

I feel that thus far I have ignored some of my own precepts. I have spoken to you as if you were all citizens of the United States faced with the problems of the United States. I have not followed the global approach.

(*Concluded on page 516*)

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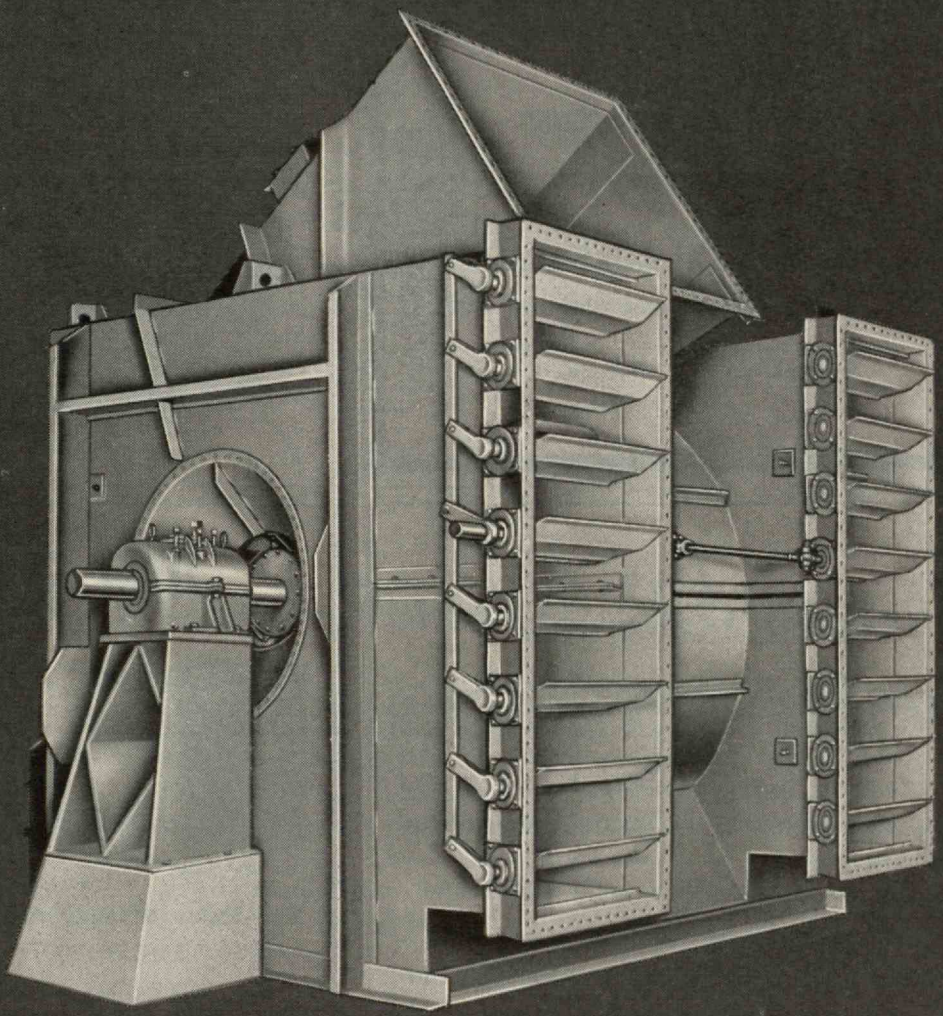

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REPORT OF THE INSTITUTE

(*Continued from page 482*)

live in a civilization which is not only dominated by science and technology, but has become overwhelmingly dependent upon advances in science for its survival. It is therefore imperative that we have the courage and imagination to innovate, and, when necessary, to break with tradition.

In his Alumni Address of June, 1957, Dr. Killian pointed out that the founding of M.I.T. came about in part as a protest against the rigidities, the frozen classical formulas of then existing institutions. We in turn must be watchful that in our current educational processes we do not become prisoners of a rigidity and classicism of our own making.

The present national crisis in engineering education has come about principally because engineering itself has passed out of the stage of simple technology into a domain of enormously complex problems. To cope with this situation, engineers – or at least some engineers – must have a great command of mathematics and basic physics and chemistry. This is patently true of those who are destined primarily for research, but it is becoming increasingly a necessity for those who are to be concerned with design and development. To meet this need, we have tended constantly to increase our requirements on the side of theory and mathematical analysis. We see no way

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REPORT OF THE INSTITUTE

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to escape this course if an institution such as M.I.T. is to fulfill its particular mission.

But there are very serious consequences to such a trend of which many of the most thoughtful members of our Faculty are acutely aware. It has been affirmed repeatedly that engineering and science are by no means one and the same. The methods and the materials of engineering and science increasingly overlap, but the aims and the functions differ profoundly. The scientist is concerned primarily with understanding, with deepening our knowledge of the laws and operations of the physical world. The engineer must be concerned with how this knowledge may be applied for the welfare of society – for the usefulness of mankind.

Now it is clear that a twilight zone exists between science and engineering where it is difficult to tell which of these two motivations predominates. Moreover, within the several branches of engineering themselves there are other profound differences in character.

As Professor [Edwin R.] Gilliland ['33] reported to you this morning, we are in a mood to experiment with new curricula. But there is still unresolved the dilemma of how we are to select students of engineering who have both the capacity to deal with the mathematical complexities of research and systems design, and an innate sense of the public responsibilities of the engineer. It is by no means clear that these interests can be fully developed in the same individual. There is a real concern lest the selection process that brings to us the most gifted analytical minds may screen out boys with other potentialities no less precious to the future of this country.

And now while I am still on the subject of education, I should like to speak for a moment of the great need of developing for our undergraduates a truly residential college. M.I.T. is and will remain an urban institution. It once had the choice of being a day school for boys, or a university in the true sense. We became convinced that an institution composed entirely of commuters could never provide the educational experience that comes from living together on a campus. This conviction underlies the rapid extension of our dormitory system following World War II with the addition of Baker and Burton Houses.

During the past year several important further steps have been taken. Next fall we will witness the expansion of a resident housemaster plan in Burton House. Professor Howard R. Bartlett, Head of the Department of Humanities, Mrs. Bartlett, two junior Faculty members, and several graduate students will become integral members of the House, with the avowed purpose of guiding and strengthening its social and educational life. I am confident that in due course of time we shall be able to extend this plan to other dormitories.

Equally important in fashioning this residental life of the Institute is our athletic program, under Pro-

(*Continued on page 522*)

REPORT OF THE INSTITUTE

(*Continued from page 520*)

fessor Balch, which is continually being improved, and which we are striving to incorporate even more closely into the total educational experience. Recently we began construction on the Du Pont Athletic Center, which with the addition of the newly purchased Armory on Massachusetts Avenue will give the Institute, for the first time in its history, athletic facilites commensurate with the needs of its students and staff.

Of all the work that has been going on at the Institute this past year with respect to teaching, I think that the most exciting in its implications is that of the Physical Science Study Committee, which has been planning a new kind of high school physics program.

This group of more than 100 scientists and educators, under the direction of Professor Jerrold R. Zacharias, has prepared the draft of a new textbook presenting a unified picture of the physical world from the point of view of modern physics, in addition to intensive work on films and apparatus for classroom demonstrations, a teacher's manual, and a series of low cost monographs for the student who is stimulated to read beyond the text.

This effort is far from complete, but I do feel certain of one thing—it is going to have, indeed already has had, a revolutionary effect in breaking out of some of the ruts of secondary school curricula. I would stress that the work of this Committee, representing co-operative efforts of people drawn from a wide spectrum of talents, may well represent the new kind of "break-through" in educational planning of the future. At the same time, I am also very proud that members of our own Faculty have led the way in this project.

Among the many other activities presently under way at the Institute, I should like to single out a few for particular mention.

A year ago we dedicated the Computation Center with its I.B.M. 704 Computer, giving the Institute the most versatile and up-to-date electronic data processing equipment of any college in the country. The Center has proved a major asset to our educational and research programs, touching courses given in the Schools of Science, Engineering, and Indus-

(*Continued on page 524*)

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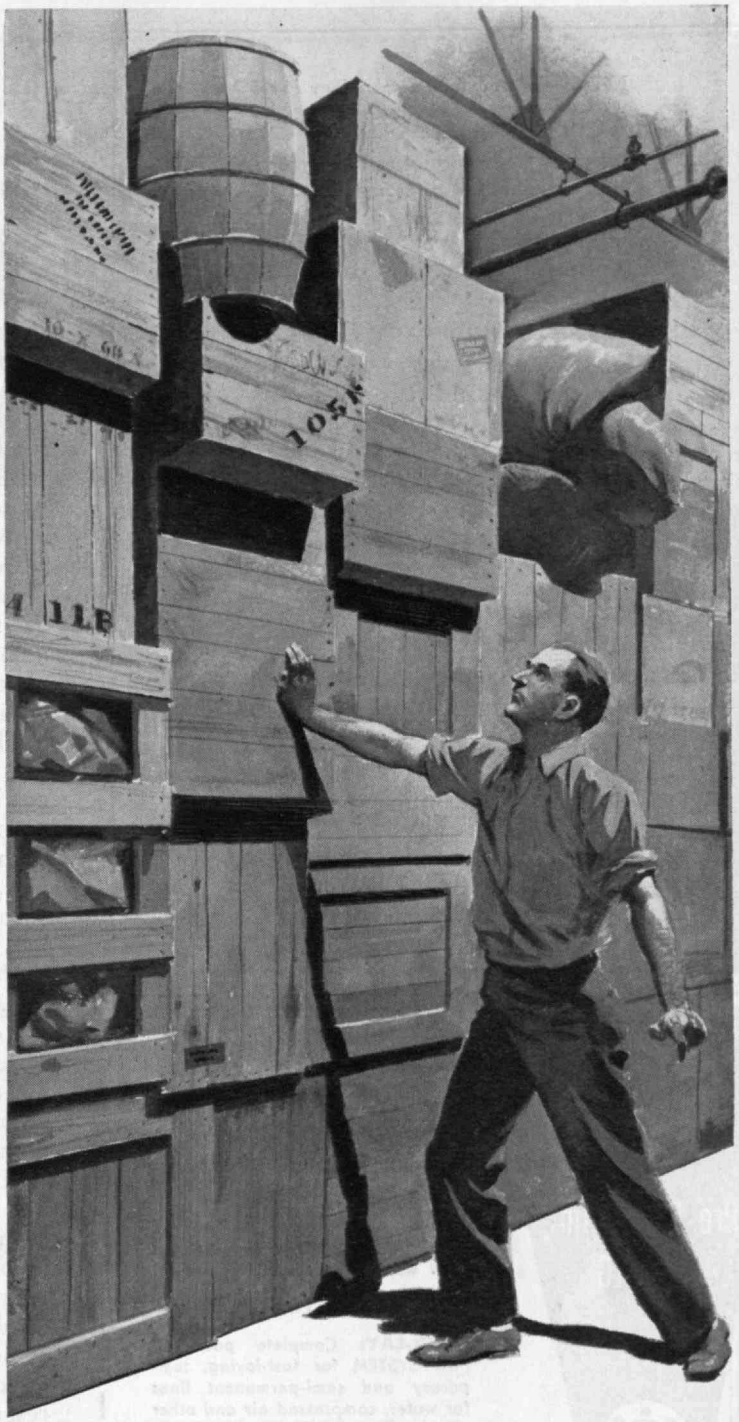

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REPORT OF THE INSTITUTE

(*Continued from page 522*)

trial Management. I think it is fair to state that there is hardly an area of research at the Institute that is not making some use of the Center. We have been delighted to share this facility in training of students and faculty from other New England colleges and universities.

Secondly, let me report that our already extensive work in Nuclear Engineering has been brought together in a graduate department under the direction of Professor Manson Benedict ['32]. With the completion of the nuclear reactor within the next few weeks, the Institute will be prepared to offer the best of advanced training in the theory and applications of nuclear energy. While current teaching and research is concentrated on the fission process, the department will ultimately develop parallel work in thermonuclear fusion. It should be reported that among the many expected uses of the reactor, serious attention will be given to advanced medical and clinical research.

Thirdly, I should like to report the establishment of a Center for Urban and Regional Studies to carry out basic research on the nature, characteristics, and problems of the urban community. By co-ordinating such research with technical specialties of the Institute, it is expected that much can be done to help solve some of the physical ills that are besetting urban areas across the nation.

Next, I should mention the recent establishment of the Center for Communications Sciences for exploring communication functions of the human nervous system and of machines, such as computers. This is an area in which M.I.T. has long enjoyed preeminence, and some of the pioneers and truly great names in the field — Vannevar Bush ['16], Norbert Wiener, Claude Shannon ['40], Jerome Wiesner — are here at the Institute. Our center will give new scope and support in this field to a collaboration among mathematicians, physicists, electrical engineers, linguists, psychologists, and physiologists. I think that without doubt it will lead to a new understanding of communication theory, and to more effective use of machines. More broadly, continued research here may ultimately lead to progress in such diverse fields as group communications, indus-

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REPORT OF THE INSTITUTE

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trial management, social behavior, and medical health.

Finally, in another area which is emerging as one of great national importance, that of materials, we are consolidating our resources. This summer a task force of our Faculty under the direction of Professor Morris Cohen ['33] will begin a systematic study of the entire field of materials, including subject matter, method of teaching, and the objectives of research. An interdisciplinary approach of solid state physics, chemistry, metallurgy, ceramics, and other fields may well give answers to the complex problems of the essential nature of materials.

Faculty Salary Support

I have only touched upon the high lights, but I am certain all these developments are as gratifying to you as they are to us. Underlying their success are the quality and loyalty of our Faculty. To provide adequate remuneration for our teachers has been a major concern throughout the past year. It was just a year ago that Dr. Killian announced that the Institute was beginning a special and concentrated drive to secure funds for the support of our Faculty salaries. You will recall that the Sloan Foundation, backed by the unfailingly generous assistance of our Alumnus, Alfred P. Sloan, Jr., '95, offered a grant of one and a quarter million dollars toward a five million dollar fund for Faculty salaries, provided the Institute obtained the remaining three and three-quarter million dollars from other sources.

To meet this challenge, an all-out effort under the leadership of Walter J. Beadle, Class of 1917 and a life member of the Corporation, has been conducted throughout the past year. I know that it is one of Jim Killian's major disappointments that his call to duty in Washington came before he was able to see the campaign to completion, but I am delighted to announce that we are now in sight of our goal – that the five million dollar target is so nearly reached that we have taken a major step and have now granted to our Faculty members substantial selective increases in salary.

The success of this "crash" program is due to the countless number of Alumni and friends of the Institute who have rallied to its aid; but if one person has been responsible, it is Walter Beadle. He has devoted not only countless hours, but also an immeasurable amount of his energy in giving personal direction to every step of the campaign. There could be no warmer note on which to close than to say to you, Walter – and through you to our fellow Alumni – thank you for all that you have done.

RESEARCH IN UNDERGRADUATE ENGINEERING EDUCATION

(*Continued from page 490*)

what should be done under such a program. The Institute has received a grant from the Carnegie Foundation to finance this study. Professor Cohen of the Department of Metallurgy will head a group that will study what the Institute can do to give leadership in the materials field. This is an area that is important to all engineers. It is an area that has been developing rapidly with our increased knowledge of the solid state and of plastics. We believe it needs to be integrated to give all engineering students a better understanding of this important area. Professor Cohen's group will also consider how M.I.T. should organize to give leadership in this field. The Institute has also obtained financial support for this study. We believe that these two studies will have an important bearing on our future educational program at M.I.T., and we are very hopeful that during the coming year we will be able to organize studies in several of the other common areas. I am sure that in the future you will be hearing and seeing the results of this work.

A number of other suggestions for improving our educational program have been made. For example, a frequent suggestion is the tutorial system. In general, it implies a closer personal relationship between the teacher and the student. We know this would be desirable. This desirable feature is generally countered by stating that it is so expensive that it cannot be considered as an educational method for a school the size of M.I.T. We believe that the technique of obtaining the real benefits of such a system can be developed at a cost that is feasible. For example, one of the supposed benefits of such a system is the fact that it will make the student and the teacher or tutor partners in making the educational progress as rapid as possible instead of having the student look upon his professor as his inquisitor and judge. We are planning an experiment whereby a limited group of our students will be given a tutorial type of program, and from this we should be able to determine whether this is desirable as compared with our present methods. This emphasizes one of the major problems in experimentation, and that is in the evaluation of the results. In the scientific area, when the experiment is carried out, in general, most of those trained in the field will agree upon the result. In the field of education, it is very difficult to get agreement upon the result or the significance of an experiment.

(*Continued on page 530*)

RESEARCH IN UNDERGRADUATE ENGINEERING EDUCATION

(*Continued from page 528*)

Last year, Edwin H. Land gave the Arthur D. Little Lecture at M.I.T., and for this he made a study of our undergraduate work. He believed that for many of our students greater motivation and consequently greater educational progress could be obtained if the early years gave more of an opportunity for research work by students. He suggested that each entering student should be assigned to a research project with a staff member, and that in working in the laboratory with experienced men, the student would find he needed information and background in various areas such as mathematics, physics, chemistry, and that he would then go to the library, to classes, or to lectures to obtain the necessary information. In this way, he would have the motivation to learn his science and engineering. Dr. Land, as part of his program, suggested that M.I.T. should put a large amount of lecture and course work on film, and that the Institute should have facilities such that a student could see and listen to such material whenever he chose. Our committee plans to look at some type of an experiment in which greater emphasis would be placed on research in our undergraduate program. We have not concluded that we want to go as far as Dr. Land suggested; but we would like to see an experiment, with a limited group of students, in which research work was a more important aspect,

(*Concluded on page 532*)

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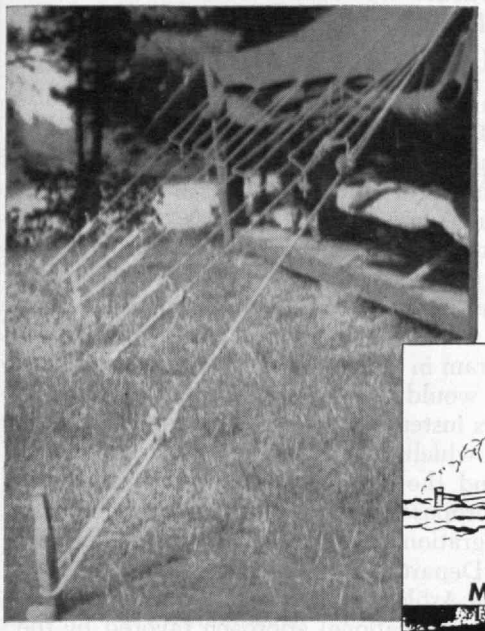

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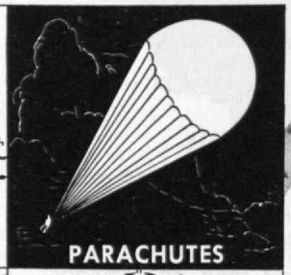

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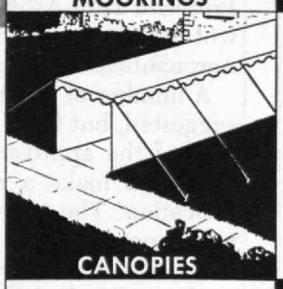

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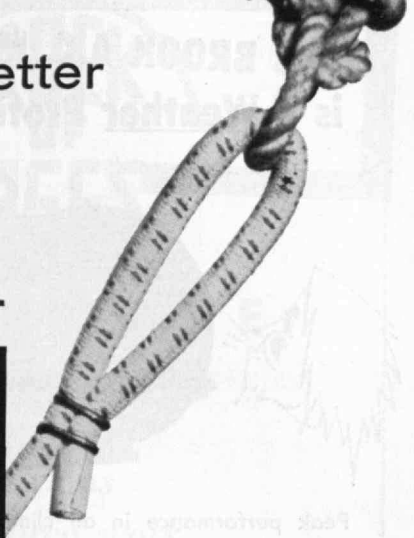

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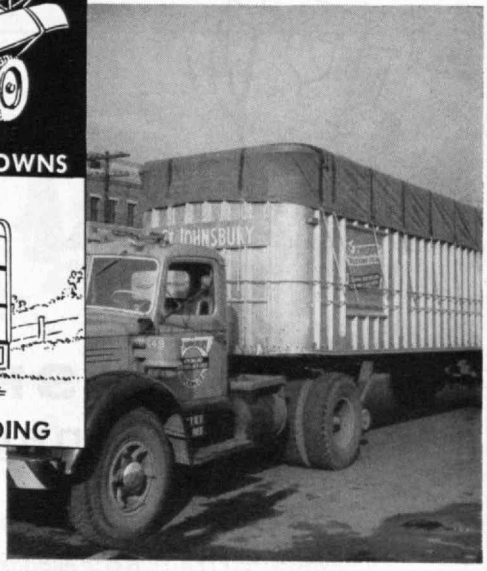

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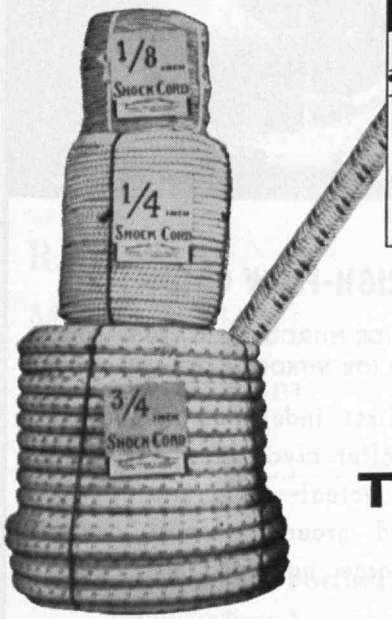

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RESEARCH IN UNDERGRADUATE ENGINEERING EDUCATION

(*Concluded from page 530*)

perhaps even the central theme, of their undergraduate program. We believe that it would be desirable to have a group of students begin and carry out this type of system for the four years.

In discussing some of the early experiments, I indicated the increased emphasis on science. Others of our staff are in favor of introducing the engineering viewpoint and method at a much earlier stage. For example, the Civil Engineering Department has proposed a program in which the engineering and scientific training would go along in parallel throughout the four years instead of the series arrangement now employed, in which the early years are largely given to science and the latter to the more professional work. This proposed type of arrangement we call "vertical integration." We would like to see the Civil Engineering Department give it an enthusiastic test. Professor Holt Ashley ['48], who is the next speaker, will discuss an educational approach favored by the Aeronautical Engineering Department.

A number of other types of experiments have been suggested, but those I have mentioned give you some idea of the approach we are planning. Such a program can make a real contribution to engineering education. The time and effort spent on such work will generate many additional ideas, and the enthusiasm of the staff groups will be carried over to the students. We look forward to a very stimulating and interesting period in the Engineering School.

TREND OF AFFAIRS

(Concluded from page 470)

The state of the Association, and its progress during the past year, were reported in detail by Mr. Lobdell. This report is too long to include in the pages of The Review, but copies were distributed to members of the Alumni Council.

Upon conclusion of the business portion of the meeting, E. Neal Hartley, Associate Professor of History in the Institute's School of Humanities and Social Studies, discussed the humanities program at the Institute. In his talk, he emphasized that the Department of Humanities is not trying to: (1) provide the M.I.T. student with a superficial coating and a facility for name dropping; (2) provide a diluted version of the humanities disciplines or provide the undergraduate a small-scale liberal arts training; (3) offer utilitarian subjects, such as public speaking – although such subjects are offered at the Institute without humanities credit and usually are offered in the professional science and engineering departments; or (4) offer a program in opposition to the engineering and science program at M.I.T.

By and large, the Humanities Department has gotten away from the data-memorizing and the lecture system. Most of its subjects are handled in smaller discussion sections where the classics can be discussed from the point of view of the positions and choices that were open to mature adults during the past 15 centuries. Professor Hartley cited a few examples of the type of books which are studied (especially those available in the paper-bound editions) and offered to provide the titles of books which have been used effectively with the students.

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and the prophet replied:
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Gifts by Will

TO THE
Massachusetts Institute of Technology

The tale is told of Almustafa, the prophet, who, having awaited for many years the ship that would return him to the place from whence he came, was making the final descent to the shore when the folk of Orphalese crowded about him. They besought him before departing to "disclose us to ourselves, and tell us all that has been shown you of that which is between birth and death."

With words of wisdom, an answer appropriate was given to the woman holding a baby, to the ploughman, to the merchant. Begged one, "Speak to us of GIVING," and the prophet replied:

> "It is well to give when asked, but it is better to give unasked, through understanding;
> And to the open-handed the search for one who shall receive is joy greater than giving. All you have shall some day be given;
> Therefore give now, that the season of giving may be yours and not your inheritors'."

Through the years the prophet's words have held true, for even today he who "through understanding" includes the MASSACHUSETTS INSTITUTE OF TECHNOLOGY as a beneficiary in his will can experience thereby a two-fold satisfaction. The successful culmination of his search for a worthy recipient and the anticipated results his generosity will assist in accomplishing. These satisfactions give an added value to the span of man's days and project his usefulness to his fellowmen far into the future.

The Massachusetts Institute of Technology because of the high quality of the education given its students, its effective research work for aiding America in peace as well as in war, and the high character of its governing body and academic staff qualifies as an institution for serving our American ideals for the present and in the years to come.

But the search, the finding, and the anticipated accomplishments are not enough; for without the properly-worded record, man's plan for the future may go awry. Hence the prophet's importuning, "— give now," should be heeded. The giving need not be an immediate physical transaction, for written directions replace the spoken word when the speaker is no longer present, and a donor can frequently make by will a gift which is larger than he can make while living. Truly, *"it is well to give when asked, but it is better to give unasked, through understanding."*

A booklet "Gifts by Will," outlining different forms of bequests to M.I.T., is available to you or to your attorney by writing to:

Director of Development
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

* "The Prophet" by Kahlil Gibran

ALUMNI AND OFFICERS IN THE NEWS

Recent Advancement . . .

Among those advanced to new posts recently, in addition to the 18 enumerated on page 468, are the following:

EARL H. EACKER'22 as vice-president, Boston Young Men's Christian Association . . . LLOYD E. RAYMOND'22 as senior process engineer on the staff of the vice-president in charge of production, the Singer Manufacturing Company . . . THERON S. CURTIS, JR.,'39 as trust officer, Industrial National Bank, Providence, R. I.

WILLIAM R. JOHNSON'42 as assistant director of research and development, Associated Spring Corporation, Bristol, Conn. . . . WILFRED H. SHAW'42 as assistant west coast representative for Hamilton Standard aeronautical equipment, United Aircraft Service Corporation . . . CHARLES F. BRODERSEN'47 as assistant to the president, American Ship Building Company, Cleveland, Ohio.

ROBERT F. DANNER'47 as production manager, Government Manufacturing Plant, Raytheon Manufacturing Company . . . ROBERT R. MOTT'48 as head of the Mathematics Department, Hebron Academy, Hebron, Maine . . . WILLIAM R. CLOUGH'51 as supervisor, Metals Research and Development, Connecticut Aircraft Nuclear Engine Laboratory, Pratt and Whitney Division, United Aircraft Corporation.

Written Words . . .

Author of *Progress Report in Chemical Literature Retrieval* is GILBERT L. PEAKES '15. (New York: Interscience Publishers, Inc., 1957, 229 pages, $4.75.)

In *Analytic Geometry*, EDWIN J. PURCELL'22 presents his subject as a logical system, emphasizing reasoning. Conics and curve-sketching are topics of this volume of the publisher's mathematics series. (New York: Appleton - Century - Crofts, Inc., 1958, 299 pages, $4.50.)

SAMUEL H. CALDWELL'25 has recently authored *Switching Circuits and Logical Design*. (New York, John Wiley and Sons, Inc., 1958.)

Two books in the Geneva Series on the Peaceful Uses of Atomic Energy are *Safety Aspects of Nuclear Reactors* edited by C. ROGERS MCCULLOUGH'22 and *Nuclear Power Reactors* edited by JAMES K. PICKARD'41. (Princeton, N. J.: D. Van Nostrand Company, Inc., 237 and 388 pages respectively.)

Elements of Mechanics of Materials by GERNER A. OLSEN'32 discusses the strength and other mechanics of materials. (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1958, 536 pages, $6.95.)

DAVID F. TUTTLE, JR.,'37 presents principles of synthesis of electric networks in which steady-state behavior as a function of frequency is important in the first volume of *Network Synthesis*. (New York: John Wiley and Sons, Inc., 1958, 1175 pages, $23.50.)

Graphic Methods in Structural Geology, one of the publisher's earth science series, is coauthored by JOHN A. SHIMER '39 and WILLIAM L. DONN. (New York: Appleton-Century-Crofts, Inc., 1958, 183 pages, $4.00.)

JAMES W. FOLLIN, JR.,'40, with L. Davis, Jr., and L. Blitzer, develops the basic theory of the exterior ballistics of rockets without moving control surfaces in *The Exterior Ballistics of Rockets*. (Princeton, N. J.: D. Van Nostrand Company, Inc., 1958, 457 pages, $8.50.)

Articles by 36 experts in the field give basic information on components of typical control systems, digests of basic design, and analyses of techniques in *Control Engineers' Handbook*, edited by JOHN G. TRUXAL'47. (New York: McGraw-Hill Book Company, 1958, $18.50.)

Reporting on work done by the Electronics Laboratory of General Electric, JOHN M. BLANK'50 and others have prepared *Nonmetallic Ferromagnetic Materials and Devices*. (Office of Technical Services, Wright Air Development Center, 1958, 134 pages, paper-bound, $3.75.)

JACOB J. BIKERMAN, Research Associate in the Civil Engineering Department, has published the second edition, enlarged and revised, of *Surface Chemistry*, which includes both the theory and applications of the subject. (New York, Academic Press, Inc., 1958, 501 pages, $15.00.)

Another Candle . . .

Among the Alumni to whom birthday congratulations are appropriate during the summer are ROLAND G. GAMWELL'86, due to become 95 on July 25; 10 others due to celebrate their 90th anniversaries; and 18 their 85th, as listed below with dates of birth:

July, 1868 – SYLVANUS H. COBB'88 on the 12th; STURGIS G. BATES'89 on the 17th; and BERTHA I. BARKER'07 on the 28th.

August, 1868 – HERBERT R. FITCH'92 on the 2d; JOHN M. HOWELLS'90 on the 14th; and FRANCIS B. CHOATE'91 and HARRY L. NOYES'90 on the 28th.

September, 1868 – WALLIS E. HOWE '92 on the 12th; MRS. THOMAS B. CARPENTER'91 on the 26th; and JOHN L. DAMON'91 on the 28th.

July, 1873 – JOHN E. WRAY'94 on the 6th; PROCTOR L. DOUGHERTY'97 and LOUIS N. GOWELL'00 on the 9th; EDWIN H. ROBERTS'96 on the 27th; and MRS. L. B. LAWRENCE'01 on the 28th.

August, 1873 – FRANKLIN N. CONANT '00 on the 4th; JAY E. TONE'97 on the 7th; and GUY L. MORRILL'96 and WALTER H. JAMES'96 on the 26th.

September, 1873 – MRS. PAULINE M. ATKINS'01 on the 2d; R. E. BAKENHUS'96 on the 10th; ERNEST E. MEAD'96 and EDGAR W. NORTON'98 on the 11th; FRED D. FITCH'97 on the 18th; CHARLES P. MOAT '96 and ALDA WILSON'99 on the 20th; FRANK E. GUPTILL'96 on the 22d; and CHARLES L. HAMMOND'97 on the 24th.

With these 29, the rolls of the Alumni Association will include a total of 77 living nonagenarians and, in addition, 740 octogenarians.

Obituary

CHARLES C. DODGE'84, May 4
WILLIAM H. LAWRENCE'91, June 12
JOEL H. PILLSBURY'96, April 20*
ALBERT C. SMITH'96, December 23*
WALLACE F. GOODNOW'99, March 15*
LAURENCE A. HAWKINS'99, May 15
FREDERICK C. WADDELL'99, April 14*
JOHN W. BROWN'00, April, 1958
HERBERT O. KEAY'00, May 14
GRACE LANGFORD'00, December 4*
HARRINGTON D. LEARNARD'00, April 6*
GEORGE VICTOR SAMMET'01, April 13*
CHARLES B. MOSELEY'03, May 9
WILLIAM D. CLARKE'05, April 28*
H. LOUIS JACKSON'05, June 6, 1947
WALDO V. LYON'05, April 24*
FRANK D. NEILL'09, May 9
CLIFFORD C. HIELD'10, April 28*
JOHN A. PROCTOR'11, April 19*
GEORGE H. RHODES'12, April 15*
KENNETH W. REED'13, March 30*
RAYMOND W. WHITE'13, March 23, 1955*
MARCUS M. ANDERSON'15, April 9*
JOHN DUFF'15, April 20*
LAWRENCE F. EDGERTON'16, January 14*
KENNETH F. HAWLEY'16, November 29*
JACOB K. WEIDIG'16, August, 1957*
HOLLIS G. YOUNG'16, September, 1957*
SAMUEL DANIELS'17, July 14, 1957*
LYMAN C. HIBBARD'17, October 22, 1956*
FRED E. ZURWELLE'20, March 23*
MALCOLM P. CANTERBURY'21, March 29*
BRUCE M. MILLS'21, April 1*
JOSEPH J. SCHAEFER'21, April 11*
FREDERICK W. BONFILS'22, May 21
JAMES A. STALBIRD'22, March 2*
CARRINGTON M. STANFORD'22, April 27
GEORGE V. SLOTTMAN'25, April 21*
KENNETH F. BECKLEY'27, May 9
JOSIAH T. NEWCOMB'27, May 6*
CARL L. MARRIOTT'29, June, 1957
HERBERT A. HUNTSINGER'32, May 11
DONALD D. SWIFT'32, March 7*
ROBERT H. HANLON'33, February 16*
ANDRÉ L. JORISSEN'36, February 27*
HUGH E. F. WAINWRIGHT'38, July 31, 1955*
JOHN W. SOUSER'40, July, 1957
THOMAS W. CLUNE'43, May 2
JOHN A. JACOBSON'50, March 12*
JAMES A. LOONEY'52, May 9
WILLIAM W. INGRAHAM'54, April 1, 1955*

* Further information in Class Notes.

Erratum . . .

Atmospheric Explorations, not *Atomic Explorations* as quoted in the June issue, is the title of the book recently edited by HENRY G. HOUGHTON'27 and published by The Technology Press of M.I.T. and John Wiley and Sons, Inc. One of the five contributors is HARRY WEXLER'39, whose paper, "A Meteorologist Looks at the Upper Atmosphere," is included.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Buffalo and Niagara Falls

On Monday evening, April 28, the M.I.T. Club of Buffalo and Niagara Falls held a dinner meeting at the new Treadway Inn overlooking the rapids of the Niagara River above Niagara Falls. Wives and friends of members were included, bringing the total attendance to 70.

Mr. William Latham'26, Resident Engineer for the New York Power Authority on the Niagara Power Project, gave a most interesting discussion of the plans for this $600 million project. Colored movies of the work already in progress were shown together with aerial views and animated pictures of the completed project.

Water will be diverted from the American side of the Niagara River above the Falls through underground conduit and open canal for approximately 5 miles to a point on the banks of the lower gorge where the storage reservoir and power plant will be located. This is almost directly across from the new Canadian hydroelectric installation known as the Adam Beck Plant. The Niagara project will have a capacity of roughly 2,000,000 kilowatts and is expected to start operations in 1961.

Similar pictures were also shown of the St. Lawrence Seaway and power project, indicating how it will tie into and supplement the output of the Niagara Power Project. – RAY S. HAMILTON,'24, *Secretary,* 144 Linden Avenue, Buffalo 16, New York.

Indianapolis

Our program this year has consisted of a series of informal dinner meetings to which we've taken our wives or dates. After dinner we have had speakers like Dr. Kenneth Kohlstaedt, Director of the Eli Lilly Clinical Research Laboratory, or Mr. Calvin Hamilton, Head of the Indianapolis Metropolitan Planning Department. These men have discussed matters of rather personal concern to the audience, such as the probable virulence of the next flu epidemic or proposed locations for local superhighways, and have added considerably to everyone's enjoyment of the meetings. The combination of good food, friendly atmosphere, and a talk that prompts a lot of questions has proven to be an optimal one for our Alumni meetings; it is likely that we will follow the same pattern next year.

For the final meeting of the year, plans have been made to hold a barbecue dinner beside a nearby lake. The elections of next year's officers do not take place until then, but their appointments and acceptances can be announced now. This is known as Indiana politics. The new officers will be: President, Marshall D. McCuen'40; Vice-president, William E. Rogers, Jr.,'50; and Secretary-Treasurer, Stefan J. Garvin'50. – WILLIAM E. ROGERS, JR.,'50, *Secretary,* 1217 Pickwick Place, Indianapolis 8, Ind.

New Mexico

For the second successive year the M.I.T. Club of New Mexico journeyed to the Lodge at Cloudcroft, N. M., for a refreshing week-end sojourn at an altitude of 10,000 feet. Our hosts for this year were the same as last: Colonel Dick Gibson'42, Deputy Chief for Operations of Holloman Air Force Base, Air Force Missile Center, Air Research and Development Command; and Jack Carnes of the Lodge. Al Tschaeche'51 was in charge of the Albuquerque end of the arrangements.

The gathering attracted Alumni from all parts of the state, with Los Alamos, Roswell, and Las Cruces being represented along with Alamogordo and Albuquerque. This Club President, making his last official appearance before the annual elections of next month, announced that plans for the M.I.T. Regional Conference to be held in Albuquerque on November 8, 1958, were rapidly maturing. The theme for the Conference will be "Engineering the Future – Role of the Southwest." Speakers will include Professor C. L. Miller'51, Director of M.I.T.'s Photogrammetric Laboratory, who will speak on the subject "Science Modernizes Civil Engineering."

The next speaker will be Dr. James A. Phillips of the Los Alamos Scientific Laboratory, who will discuss "Progress in Using Atomic Energy," with especial reference to the utilization of fusion reactions in the production of power. George R. Harrison, Dean of Science at M.I.T., will conclude the afternoon session with a discussion of world prospects for future energy sources. At the evening banquet we anticipate the privilege of having both Drs. J. A. Stratton'23 and Jim Killian'26 address the session.

The regular evening program then got under way, with Lieutenant Colonel David G. Simons presenting a movie of his recent record-breaking balloon ascent to 120,000 feet in Project Man High, and giving us a running commentary on his experiences.

Following Dr. Simons we heard a far-ranging and instructive dissertation from Dr. Knox Millsaps, Technical Director of Holloman Air Force Base. Dr. Millsaps once taught at M.I.T.; and after his current experience with the weather in our sunny Southwest (advertisement), he can categorically state that the location of the Institute, weatherwise, is one of the worst on the North American continent. Dr. Millsaps would specifically nominate the center of Harvard Bridge for the dubious honors of the worst single spot in the Cambridge area. This writer, having not-so-fond memories of winter walks across this bridge, heartily agrees. Dr. Millsaps stated that, in his opinion, M.I.T. was the leading technical institution in the U.S., a remark which will undoubtedly result in his being drummed out of his own alma mater (California Tech). Dr. Millsaps noted the widespread insufficiency of teaching salaries and pointed out the need for action in engineering circles posed by the question: should we humanize the engineers or engineer the humanities?

The following morning called for a full schedule as lined up by Dick Gibson. We visited the Moon Watch station at Alamogordo, which has the distinction of first detecting and computing the orbit of Sputnik I. We traveled from here to Holloman Air Force Base, where we inspected some of the latest developments in aircraft and were given a tour of the famed sled track. The approximately seven-mile track is in straight alignment to within 5/100ths of an inch, but we were told steps are being taken to bring this to within 5/1000ths, a remark which promptly set our civil engineering minded attendees to computing just how accurately this deviation could be measured, what with temperature stresses in the track, non-homogeneity of material, and the inevitable human frailty of observation and measurement. Possibly we need a self-correcting type of gaging apparatus, similar to the device reported by Dean Harrison in the current issue of the *M.I.T. Observer* for producing grooves on defraction gratings.

The meeting broke up at the end of the tour on the fourth, with the various members wending their way homewards into the glorious glow of our setting southwestern sun (still further advertisement). I am truly sorry to intrude with such lyrical descriptions of our southwest location, but want to apprise the elect who are planning to attend our Regional Conference this fall of the many joys that are in store for them.

Attendees at the Cloudcroft meeting were as follows: Mr. and Mrs. F. C. Alexander, Jr.,'32 and sons; Mr. M. Findell'57; Colonel and Mrs. R. C. Gibson '42; Mr. and Mrs. Thomas N. Godfrey'50 and daughter; Mrs. James Hanrahan; Mr. and Mrs. R. P. Holland, Jr.,'34; Dr. and Mrs. Knox Millsaps; Mr. Theodore J. Morelli'47; Mr. and Mrs. W. R. Perret'30 and son; Mr. and Mrs. T. J. Raftery'31 and son; Lieutenant Colonel and Mrs. David G. Simons and son; Mr. and Mrs. J. W. Sims'49; Mr. and Mrs. A. N. Tschaeche'51 and son; Professor and Mrs. H. Bartel Williams'47; Mr. and Mrs. R. W. Williams and son; Mrs. W. Venscher; and Lieutenant and Mrs. A. Lee Zuker'55. – F. C. ALEXANDER, JR.,'32, *President,* 339 Washington Street Northeast, Albuquerque, N. M.

New York

The annual meeting of the M.I.T. Club of New York was held at the club headquarters in the Biltmore Hotel on April 24, 1958. The slate of officers recom-

mended by the nominating committee was unanimously elected. The new officers: President – Eugene R. Smoley'19 (re-elected); Vice-presidents – D. Kenneth Finlayson'35, Anton E. Hittl'36, Edward C. Edgar'35; Directors, 1958-61 – Roger G. Blum'41, Thomas F. Creamer '40, Edward S. Goodridge'33; Treasurer – Thornton E. Smith'45 (re-elected); Secretary – Vernon O. Bowles'33.

The approximately 50 members present at the annual meeting heard reports of the Club Secretary, Roger G. Blum; the Club Treasurer, Thornton E. Smith; House Committee Chairman, D. Kenneth Finlayson; Club Utilization Committee, Edward C. Edgar; Program Committee, Anton E. Hittl. President Smoley outlined to members the recently adopted dues structure, which provides for a basic membership charge of $10.00 annually and a house "privilege" charge of $30.00 annually, payable in quarterly installments to those who make use of the Club facilities with some frequency. Applicable federal and city taxes in the amount of 20 per cent are additive. The new dues structure will greatly improve the financial stature of the Club and provide for the accommodation of an expanded membership in larger and better facilities at the Biltmore Hotel. Following the annual meeting the membership enjoyed an excellent buffet dinner at the Biltmore.

The annual spring dinner meeting of the Long Island Group was held at Westbury Manor and turned out to be a great success enjoyed by all who were farsighted enough to make their reservations early and be included within the 200 limit. Ed Newdale'48 was chairman of this outstanding affair.

The annual golf outing of the Westchester Group was held June 3, 1958, at the Scarsdale Country Club near Hartsdale Station on the Harlem Division of the New York Central Railroad. Bill Moore'33 was chairman of this activity.

The annual beach party of the Long Island Group is to be held at Gilgo Beach on August 23, 1958. Information is available and reservations should be made through Ralph Krenkel'46, Chairman, whose address is 33 Darby Drive, Huntington, N. Y.

We regretfully report the death of Kenneth S. M. Davidson at Istanbul on March 19, 1958. Mr. Davidson, a graduate of the Class of 1919, was internationally known for his work on ship hull design. He is survived by his wife, Mrs. K. Davidson, and a daughter, Ann. – Vernon O. Bowles'33, *Secretary*, Holly Ridge Farm, Katonah, N. Y.

Philadelphia

We are planning a clambake for August 16 at Wiley('39) Corl's Gladwyne residence. The details will be in the hands of our members by July 1 before this issue is received.

We are formulating our plans for the next season. Dean Harrison is committed to speak to us on advances in science at the Franklin Institute on October 27. – Herbert R. Moody'41, *Secretary*, 8609 Patton Road, Wyndmoor, Philadelphia 18, Pa.

Richmond

Members of the M.I.T. Club of Virginia and their ladies met on May 16, 1958, at the Commonwealth Club, Richmond, Va., for cocktails and dinner. In the annual meeting, the following officers were elected for the 1958-59 season: President, Richard H. Catlett'17; Vice-president, Robert B. Mills'33; Secretary, Schrade F. Radtke'40; and Treasurer, Garland S. Sydnor, Jr.,'49. The directors elected include the four officers and Carson L. Brooks'35, John Skelton Williams'22, and Miles Cary'24.

Following the business meeting, Mr. Jerry Burke, Executive Vice-president of Experiment, Inc., presented a most interesting and enlightening illustrated talk on "Missiles and Rockets." He covered a great deal of what we know about the Russian program and the status of international competition for the conquest of space. His talk climaxed a series of most interesting programs held during the past season.

We were most happy to have as our honored guests Mr. and Mrs. H. E. Lobdell'17, and all had an opportunity to renew their friendship with Lobby. – Schrade F. Radtke'40, *Secretary*, 1106 Lake Avenue, Richmond, Va.

Saint Louis

I'll advertise! Usually we are so far behind writing up these notes that everything is historical. Before you finish reading you'll know that there is – I'll start at the beginning – history still in the making.

Last February your board of governors, in a serious discussion, were seriously planning the groundwork for the spring and summer activities. We planned a stag affair for the young members and the board in March. We planned a ladies' nite in May, and of course we planned a picnic in June. That was what did it! Professor Ed Brooks'39 (local weatherman and member of the board) stopped correcting a textbook and informed us that an analysis of the factors at hand indicated that June would be bad for picnics. Forecast: Rain and more rain, all month long. [Pardon me, Professor, if I have put my words to your forecast.] We debated at some length on the weather for June, but by now you know the real story. Ed disrupted our thinking, though, and we planned the picnic. We also came up with a unique idea in the history of the Club: Family Nite at the Opera. We know that it is unique since this is the first year the plan has been offered by the Opera to our knowledge.

The Family Nite Plans: For $3.50 per head you will get a backstage tour (Which of you has a daughter that isn't stage struck enough to want to meet the actors and male chorus backstage?), a box lunch, and a good seat out in front for the show. Sunday night, August 24, 6:00 P.M., we'll be looking for you all. [P.S. bring your umbrella.]

As for the history, there are two meetings to talk about, one to guess about, and several odds and ends. We had a fine time, even though there was only a small turnout, at the stag affair. Since it was held the day after Saint Patrick's Day, we all assume the rest of you were still getting over the effects of green beer. The 15 old and new members who came are able to stand up straight, look you in the eye, and say, "Green beer is for the Irish, we drank free Scotch."

On May 13 we had a good turnout of men and wives. Schneithorst's West was the place; and Professor Joseph Kaye'34, the guest speaker. We were interested by the recent work in electric power generation the professor has been doing. We were proud to hear that M.I.T. men are again making the seemingly impossible become possible. Welcome back at any time, professor.

While I write, the picnic is still a month and more away; but plans are firm enough to thank our host, Francis Mesker '27, for the use of his estate. We have had many a good time at your place in the past; and weather or no [Ed Brooks take note], we are set for a good time. You who read now know what a good time was had by all – swimming, playing, drinking, and gabbing.

Not news to those in the Club area but perhaps to those who have been in the past is the death of three of our most faithful members of the Club: Chuck Loomis'16, Ed Fulton'30, and Irv Mitchell '30. All three have served the Club well; Ed was president in 1949 and Irv was president in 1951. On the brighter side, Buzz Scott'50 will soon be hearing wedding bells. Pat Hoge started occupying all of his spare time several months ago. Congratulations, Buzz. – James C. McAllister'50, *Secretary-Treasurer*, 806 Thornberry Lane, Kirkwood 22, Mo.

Southern California

Our April meeting held at the Institute of Aeronautical Sciences Building attracted over 100 Alumni and friends, making it one of the most successful club meetings held in recent years. Dr. Hibbs, who reigns as chief of the Research Analysis section of California Institute of Technology's Jet Propulsion Laboratory, was the featured speaker. As his part in J.P.L.'s earth satellite program, Dr. Hibbs is responsible for assuring the successful tracking of the satellites and establishing their orbit. Coupling an impressive knowledge of his subject matter with a quick wit, our young speaker gave a fascinating presentation of his topic "From Satellite to Space Ships." The question period that followed the discussion continued for 30 minutes. At the conclusion, Dr. Hibbs received a long ovation from the audience. It was quite gratifying to witness such an enthusiastic response.

Joe Conrad, Regional Director of the Alumni Fund, visited our area in March. Joe was in town to give a last minute pep talk to his alumni fund chairmen prior to winding up the 1958 campaign. The personal solicitation program which is now being employed to stimulate a greater participation by active Alumni is proving to be quite successful. Latest tabulations indicate that many areas have doubled the number of Alumni now contributing to the fund. Nice work, Joe, on the part of you and your helpers.

Hi Beebe'10, Chairman of the directory

committee, reports that there are now over 1,900 Alumni residing in the southern California area. This is an increase of about 300 since 1952. Apparently the Los Angeles Chamber of Commerce is really getting through to Tech men.

The board of governors' meeting regularly held the third Monday of each month has been averaging an attendance better than ever recorded in previous years. (The discussions themselves also indicate a marked increase of interest and enthusiasm among the board members.) At the May club meeting Dr. Kellogg, who heads up the Geophysics Group at Rand Corporation, was guest speaker. He discussed "Peacetime Benefits from the Exploration of the Upper Atmosphere and Space." Jay Zeamer'40, who is doing such an excellent job as program chairman, has informed us that Dr. Kaplan of the University of California at Los Angeles Physics Department will address the club at a dinner meeting in October.

Although our recent monthly meetings have shown an increase in the attendance, we are anxious to attract even larger audiences in the future. We especially hope to see greater interest among the more recent graduates. Get off the dime, fellows, and take an active part in your club. — JOSEPH W. MARSHALL'53, *Secretary*, 904 West Hyde Park Boulevard, Inglewood, Calif. DAVID E. LONG'51, *Assistant Secretary*, 9624 Highland Gorge Drive, Beverly Hills, Calif.

Western Pennsylvania

On Saturday, May 3, 1958, this club held its annual dance at the University Club in Pittsburgh, Pa. All business was omitted and the 38 members and guests who were present concentrated on enjoying a good meal, meeting socially the other members, and attending the regular Saturday night University Club Dance. — STUART D. MILLER'32, *Secretary*, 3043 Dwight Avenue, Pittsburgh 16, Pa. GEORGE M. COLVILL'51, *Assistant Secretary*, R.D. 1, Eightyfour, Pa.

CLASS NOTES

1891

We held last month our 67th annual meeting and dinner. It is perhaps appropriate that we look back and observe how we did it 55 years ago.

The following account is quoted from a four-page printed pamphlet Harry Young gave me a year ago. He took it from class records he had preserved. And here is the story.

"Association of Class of 1891, M.I.T. Twelfth Annual Meeting and Dinner: University Club, Boston: April 24, Nineteen Hundred and Three. At this meeting of the Class 17 members were present: Alley, Bowen, Bryden, Conant, Dana, Dart, Douglass, Fiske, Garrison, Hatch, Kimball, J. W. Pierce, J. G. Thompson, Trowbridge, H. L. White, Wilder, Young.

"President Fiske presided, and the report of the secretary-treasurer was read and accepted. The election of officers for the ensuing three years was held, with the following result: Charles Garrison, President; Howard Forbes, Secretary-Treasurer. The same entertainment committee was appointed — Alley, J. Campbell, Dart, Forbes, Goodwin. The change of secretary every three years was discussed, and it was considered expedient to change the By-Law I so as to make his office permanent."

The by-laws were changed, and we read on: "Officers shall be Secretary-Treasurer and President. The Secretary-Treasurer shall serve for life. It will be the custom hereafter to have members of the association give short talks on matters of special interest in their own business life."

Then follows: "The salaries were averaged as usual"; and a schedule including seven years, 1897 to 1903 inclusive, appears. I give here the first and last of the seven years' figures:

	Average	Highest	Lowest
1897	$1,400.	$2,200.	$ 600.
1903	3,491.	7,500.	1,500.

"Business being over, Mr. Garrison gave a talk about the De Labal Steam Turbine, having brought a 30 horsepower wheel and shaft for purposes of illustration. Comparisons were made with the two other standard types, viz., the Curtis Turbine of the General Electric Company and the Parsons Turbine of the Westinghouse Electric and Manufacturing Company.

"Mr. Trowbridge then gave a description of his visit to the G. E. Company shops, where he saw one of their large 7,500 horsepower turbine-generators being completed. Mr. Trowbridge is chairman of the building committee of the United Shoe Machinery Company, and is looking into the matter of turbine power for the new plants about to be erected. He is also looking into the matter of having the buildings built entirely of cement, and this brought up some chemical problems upon which Mr. Wilder enlightened the audience."

Then follows the treasurer's report: "Receipts, $409.40; expenditures, $345.43; balance on hand, $63.97. May 1, 1903. Charles Garrison, Secretary-Treasurer."

And now, dear fellows, keep me in mind and let me know of any news which should appear in the November issue of The Review, which is our next. — WILLIAM CHANNING BROWN, *Secretary*, 36 Foster Street, Littleton, Mass.

1894

Before this reaches the eyes of classmates the Annual Aumni Day will have come and gone. Our numbers are now so small that we can hardly expect many to be present, but the Secretary is hoping that '94 will be represented by a few of the faithful. This is to give notice that next year we all should come to celebrate our 65th anniversary of graduation.

While the Secretary feels that it is unbecoming to write about himself, he is sure that classmates will be pleased to know that the Institute of Food Technologists has established a graduate fellowship known as the Samuel Cate Prescott Fellowship, the holder of which can pursue his graduate work in any of the institutions in the United States that have established adequate departments of Food Technology. There are now about 12 or possibly 15 such universities or technological institutes, of which M.I.T. was the first. Of course it would be gratifying to have the recipients of this award think favorably of pursuing their advanced study here. This is the second graduate fellowship named for your Secretary, the first one having been established by the Refrigeration Research Foundation for advanced study and research in food science especially related to food preservation by refrigeration, which has now become a large and growing field. The department of Food Technology at M.I.T., although still small, has a distinguished record and a fine group — about 40 — of graduate students. It is recognized abroad as well as throughout North America. It is a pleasure to have had a part in its development. — SAMUEL C. PRESCOTT, Room 16-317, M.I.T., Cambridge 39, Mass.

1896

From Wichita, Kansas, Henry Sears writes: "At present I am doing considerable tutoring in mathematics for high school seniors and college freshmen. It has been a lifesaver for me. The contacts with youth more than repay me for the effort I am giving. I quit class work here at the University in '54, but still keep in touch with friends there. The mathematics people very generously made me a charter member of the Pi Mu Epsilon, which is composed of outstanding students in mathematics and, of course, members of the Mathematics Department."

Conveying best wishes as instructed, I found Damon fairly well and in hopes of attending the June Alumni meeting; Rockwell said he enjoyed Hedge's greetings on his 86th birthday, May 4, and he thought the members of the Class were somewhat remiss in keeping secretaries informed of their doings. Henry Hedge was pleased to be remembered by a Course IX man, and he says he gets around and drives his car.

Joel Horace Pillsbury died on April 20 at his home in Richmond, Vancouver, Canada, according to a letter received from his son. Sympathy of the Class was expressed in a letter to his son, an assistant professor at the University of British Columbia. The letter his son wrote us says: "Some years ago Father asked me to write to you when he should be gone. Father was born in Kansas City; soon after his birth the family moved to Massachusetts. His two older brothers were Frank C., late consulting engineer to the Massachusetts Highway Commission, who died in 1934; and John Dix, a businessman of Stoughton and Boston, who died in 1932. My father went to school in Bridgewater, graduating from high school at the age of 14. He attended various schools and academies and graduated from M.I.T. in 1896 in civil engineering. He then joined the Corps of Engineers and was employed for 10 years on harbors and fortifications south to Key West. He was on the original survey of the Everglades and of Miami Harbor. One year he was in the Ohio Valley working on the river there.

"In April, 1906, he was offered and accepted the post of assistant harbor engineer for the Grand Trunk Pacific Railway, under James H. Bacon, their harbor engineer, who had been associated with him in Florida. Just 52 years ago he landed at the Indian village of Metlatkatla, near the future city of Prince Rupert on the north Coast of British Columbia. He had with him a crew of 30 instrument men and mechanics. They landed in a dense forest a few days later and set about clearing a camp site and building the first wharf. This was the start of the present seaport and rail terminal of Prince Rupert. The topographic and hydrographic surveys were his direct charge, and later as resident engineer he built the big shipyard and drydock for the railway. During the 28 years to 1934 he continued in the city, first as general manager of the shipyard and then as owner of a stevedoring company. In 1934 he was appointed as commissioner on the Workmen's Compensation Board and moved to Vancouver, where he had lived ever since. His wife, Amelia Florence Hall, whom he married in Quincy in 1899, died in 1941. Five of his children who survive him are: Mrs. Hugh L. Keenleyside, wife of Dr. Keenleyside, Director-General of Technical Assistance Administration for the United Nations; Mrs. Richard Van Cleve, wife of the dean of the College of Fisheries, University of Washington, Seattle; Mrs. R. D. Prosser of Kelowna, British Columbia; Mrs. K. G. Patrick of Cobourg, Ontario; and Richard Washburn Pillsbury, Professor of the Department of Biology and Botany, University of British Columbia, Vancouver, Canada.

"He was a great sportsman, beloved by many young people of the North for his backing of their games and enterprises, and a former alderman of the city. He lived in retirement since 1945 and was almost inordinately proud of his alma mater. His funeral was from St. Anselm's Church in Vancouver and his ashes are to be disposed of in the Strait of Georgia, according to instructions in the will."

Notice has been received from the Alumni Office that Albert C. Smith, who was with the class in Course V in '94-'95, died December 23, 1957. — JAMES M. DRISCOLL, *Secretary*, 129 Walnut Street, Brookline, Mass. HENRY R. HEDGE, *Assistant Secretary*, 105 Rockwood Street, Brookline, Mass.

1897

The Alumni Association has notified us of the following change of address of a former member of Course VI in our Class: John J. McSorley, 2110 Wrenn Street, Greensboro, N. C.

As of May 7 when these notes are written, no letters have been received; hence, no news of personal interest for this the last issue of the current year. Yet the survivors of our Class are apparently a hardy group.

At this time, including special students and transfers, our class list totals 65, of whom 5 are of the fair sex. 24 reside in Massachusetts and a total of 31 (almost half) in five of the New England states. Why no one has chosen to live in Vermont is incomprehensible, for it is a beautiful state, most of it like a park, with scenic Lake Champlain an added attraction.

There may be other reasons why such a large number live in Massachusetts; but one may be that in 1893 when we entered, due to the efforts of General Walker, M.I.T. enjoyed an annual subsidy from the Commonwealth (was it 50 grand?) with the proviso that two students from each county in the state were given scholarships. Of course it may be that the charm of the Bay State appealed to students from elsewhere to such an extent that they remained here. On the other hand, as time went on doubtless others who had settled here moved elsewhere due to our state income tax, one of the highest in the nation. Residing now outside New England are seven classmates in New York, four in New Jersey, three each in California, Pennsylvania, and District of Columbia, two each in Ohio and Canada, and the remaining ten scattered throughout ten states.

Be sure and write in some personal news during the summer and thus escape these boring statistics we have imposed on you.

On occasions we have considered making some extraordinarily false statements (like the Russians) in the hope that some of you would write to us in angry protest at our fantastic ideas, and thus provide copy for these notes. We may do so. In the meantime, may your summer be a happy one! — JOHN P. ILSLEY, *Secretary*, 26 Columbine Road, Milton 87, Mass.

1898

These notes are being written on May 9. As regards the 60th, we have received to date 33 cards in reply to the letter of April 22; about one half checked, "attending." This is encouraging, especially as some who plan to attend are coming from a distance; thus, one each from Rochester, N. Y., Baltimore, Md., Washington, D. C., Sarasota, Fla.; and two from Chicago. Furthermore, four are accompanied by their wives and/or relatives. The whole story will appear in the fall issues of The Review.

Now for biographical material promised in last month's Class Notes.

Through the courtesy of Mabel Forrest Lambert we received a letter concerning Grace Langford. Classmates, especially chemists and physicists, will remember that Miss Langford was with us for more than two years. In her third year, she was obliged to leave M.I.T. because of typhoid fever. She returned later and graduated with the Class of '00. Further interesting facts concerning her career will be found in the '00 class notes.

We were startled to receive the following letter from Cincinnati, Ohio, concerning Rudolph Tietig. "Dear Mr. Chapin: This is to advise you that my father, Rudolph Tietig'98, passed away on Saturday, February 8, 1958. Dad had not been well for some time, and his final illness lasted for almost two months. He had retired from business about two years ago. As you know, he and the late Walter Lee'98 were partners in the architectural firm of 'Tietig and Lee' for 50 years. It had been one of Dad's fondest desires to attend with Mother his coming 60th reunion of M.I.T., Class of 1898. It may interest you to know that on June 28, 1955, Mother and Dad celebrated their 50th wedding anniversary. Dad was well at that time, and it was a gala affair. My father leaves a wonderful memory in the hearts and minds of all who knew him. Sincerely, Rudolph Tietig, Jr., M.I.T. 1932."

Further details are contained in an article from the *Cincinnati*, Ohio, *Enquirer*, received through the courtesy of the Alumni Association and also of Dan Patch'02, a friend of the Tietigs and the Lees. "Rudolph Tietig, Architect, Designed Many Buildings In City: Rudolph Tietig, Sr., a leading Cincinnati architect and partner for 56 years in the old Tietig and Lee firm, died yesterday at Holmes Hospital. He was 80 years old. With Walter H. Lee, who died in 1952, Mr. Tietig drew plans for many buildings in this area, including the Doctors Building; The Chamber of Commerce Building; Knox Presbyterian Church; Rockdale Avenue Temple; Stowe, Kilgour, Taft and Sayler Park Schools; the Christ Hospital Nurse's Home; the City of Cincinnati Safety Lane and Municipal Garage; Cincinnati Chemical Co.'s Norwood plant; the American Red Cross office building; and many Kroger Company buildings.

"Mr. Tietig and Mr. Lee grew up together in Cincinnati. They attended the old Cincinnati Technical School together and were roommates at the Massachusetts Institute of Technology, both graduating in 1898. Mr. Tietig was a draftsman for various architectural firms in New York from 1898 until 1902, when he returned to the city and formed the partnership with Mr. Lee. Mr. Tietig retired in 1956. He was a member of the American Institute of Architects and of the Cincinnati chapter. He belonged to Avon Lodge, F. and A. M.; Cincinnati Country Club; and the University Club. A resident of 2529 Observatory Road, Hyde Park, he and his wife, Mrs. Margaret Andrews Tietig, celebrated their golden wedding anniversary in 1955.

"Other survivors include two sons, Albert A., Mount Lookout, and Rudolph Jr., Lafayette, Calif.; a daughter, Mrs. Agnes Parlin, Mount Washington; a sister, Mrs. Clifford Kaiper, Fort Mitchell; and six grandchildren. The family requests that memorial donations be made to the Visiting Nurses Association of Cincinnati."

We received a telegram on March 20 from Katherine Seidensticker Lemon advising of the passing of her father. Father was our distinguished classmate, Lewis J. Seidensticker. Services were held in Montreal and then in Boston at Watermans. George Cottle, Frederic Jones, and the Secretary attended at Watermans, representing '98. Dr. Dana Greeley, a prominent minister of Boston, conducted an impressive service. There were also present at the services in Boston the daughter and son-in-law with their children; other relatives and friends; and from the Atlantic Sugar Refineries, Ltd., of which L. J. Seidensticker was president for many years, Vice-president A. F. Blake, Secretary and Treasurer Arthur P. Bealieu, and Miss Hazel Herbold, who for many years was Seidensticker's private secretary.

Through the courtesy of Miss Herbold, we have received the following article from the *Montreal Star* of March 20. "Prominent in Sugar Industry: Lewis Jerome Seidensticker, 81, a world-wide figure in the sugar industry and president of Atlantic Sugar Refineries, Ltd., until his retirement last year, died in the Montreal General Hospital today. Following his retirement as president, Mr. Seidensticker remained active in the company and served in a consulting capacity. He was still a director of Atlantic Sugar Refineries, Ltd., and the Acadia-Atlantic Sugar Refineries, Ltd.

"Born in Meriden, Conn., he graduated in chemistry from the Massachusetts Institute of Technology in 1898. Immediately afterwards he went to Cuba, where he worked in sugar factories and about two years later became administrator of a sugar 'central' in that country. In 1904 Mr. Seidensticker became chief chemist for Arbuckle Sugar Refining Company at Brooklyn, N. Y., later going to Warner Sugar Refineries, Ltd., at Edgewater, N. J., in the same capacity. He joined Atlantic Sugar Refineries as refining manager of the company at the Saint John, New Brunswick, plant in 1913. In 1920, he moved to Montreal as general superintendent and soon afterwards was appointed vice-president. In 1926 he was further promoted to the position of company president, a post he retained until his retirement in 1957. Two years previously he retired as managing director of the Acadia-Atlantic Sugar Refineries, which is the parent body of the company.

"In private life, Mr. Seidensticker, who became a naturalized Canadian, was extremely interested in philanthropic work in Montreal and district. He took a keen interest in the welfare and development of Montreal hospitals and several welfare institutions. He was a member of St. James' Club of Montreal and the Union Club of Saint John, New Brunswick. In addition, he was a former director of the Sugar Research Foundation of New York and was a member of Sugar Technicians of New York, Inc., and a life member of the American Chemical Society. He is survived by a daughter, Mrs. Ivor Lemon, and three grandchildren, Louise and Anna and Olof Lemon, all of Stanstead, Quebec."

Miss Herbold has also kindly sent us a copy of the March 25 issue of the Lamborn Sugar Market Report, published by Lamborn and Company, Inc., 99 Wall Street, New York. In this issue, enclosed in a box, is a write-up of the career of Lewis J. Seidensticker, essentially the same as appeared in the Montreal Star, as above quoted, closing with the following paragraph: "To his family, friends and business associates, we extend our heartfelt sympathy."

A personal testimony and other facts are contained in a letter from Miss Herbold, from which we quote in part: "I have been associated with Mr. Seidensticker since 1914, and have been his private secretary since 1920. I have enjoyed serving him and wish I might express in words such as he always used my appreciation of him in times of stress and strain which we encountered on the way. He was always a fine gentleman, kind and considerate to all, devoted to his duty and to those under him, a great humanitarian, has been and still is a loving memory to all our organization — some of those even now grandparents always called on festive occasions to extend their best wishes and gratitude for his consideration of them. We do not feel he is gone from us, and the feeling expressed by all our staff is that he is still with us.

"Cables from around the world have been received. I thought the service in Boston very beautiful. You will be pleased to know the flag was half-mast on the Saint James' Club — his Club."

"Seide" was also looking forward to attending the 60th.

Now, a job for everybody! We have received back from the April 22 mailing, returned unopened, letters addressed to the following classmates: Howard J. Benson, Chester F. Drake, Walter G. McConnell, and Mark E. Taylor. We should appreciate any information leading to the identification of the present addresses of these classmates. Thanks! — EDWARD S. CHAPIN, *Secretary*, The Eliot, 370 Commonwealth Avenue, Boston 15, Mass.

1899

Through the courtesy of Floid M. Fuller'06, I received a clipping from the *Bethlehem Globe-Times*, reporting the death of Frederick C. Waddell on April 14, in St. Luke's Hospital in that city. Fred was a native of Halifax, Nova Scotia. After he graduated from Tech, he was associated with the Hay Foundry and Iron Works as chief engineer until the company was taken over by the Bethlehem Steel Company. There he took on added responsibilities in the fabricated steel department until 1940, when he transferred to the mining department. He retired in 1955 at the age of 80.

Bassett Jones, who spends his winters as a cliff dweller in New York City and his summers as a naturalist on Nantucket Island, recently sent me a long list of scientific papers published by him. Evidently he has had many ups and downs in life, but has been able to throw light in many dark places. About half of the papers were on the complexities of installing high speeds elevators in sky-scrapers; and most of the others, on the intricacies of stage lighting or of throwing the right intensity and kind of light on fine industrial processes and in very large structures.

Word has just been received of the death of Wallace Field Goodnow, II, on March 15, at his old homestead at Bass River, Mass. He was one of seven boys graduating from the Cambridge English High School in 1895 to enter Tech that year. (Your Secretary was one of the seven.) Wallace was a heating and air conditioning engineer and spent his winters in New York and Connecticut and his summers at the old homestead at Bass River, Mass. He was a scion of one of the oldest settlers in that area. The facts above noted were received from his sister on the deadline date for this issue of The Review. I will try to obtain details relating to his engineering career for the first fall issue. — BURT R. RICKARDS, *Secretary*, 349 West Emerson Street, Melrose 76, Mass. PERCY W. WITHERELL, *Assistant Secretary*, 84 Prince Street, Jamaica Plain, Mass.

1900

These notes are necessarily written before our reunion, so no report of it can now be made.

Miss Grace Langford died December 4, 1957. She entered the Institute in 1894 with the class of 1898. In her third year she had to leave on account of having typhoid fever; she returned later as a member of the Class of 1900 and graduated with us from the Course in Physics. She taught for a few years at Wellesley College and later at Barnard. At her retirement she returned to her native town, Plymouth, Mass., and lived in her ancestral home until increasing feebleness and progressing blindness made residence in a nursing home necessary. She was about 85 years old at the time of her death. She was a *Mayflower* descendant. She left no near relatives. Mrs. Mabel Forrest Lambert, M.I.T.'98, writes: "Many in our class will remember her for her keen mind and quaint sense of humor." We are sure that many of the Class of 1900 will also similarly remember her.

Harrington D. Learnard of Andover, Mass., died April 6, 1958. He was a graduate of the Boston public schools and was a member of the Class of 1900 for two years, enrolling in the Course in Mechanical Engineering. On leaving M.I.T. he went with his uncle, Seth W. Fuller, electrical contractor in Boston, and became manager of the firm. He later was connected with several other firms including Standard Looms, Inc., of Spartanburg, S. C. (of which he was treasurer and general manager); Great Falls Manufacturing Co. of Somersworth, N. H.; Pacific Mills of Lawrence, Mass.; and Fay, Spofford, and Thorndike of Boston. He had lived in Andover since 1937. He was a 50 year member of Mt. Lebanon Lodge, A. F. and A. M., and Boston and Irving Southworth Lodge, A. F. and A. M., Lyman, S. C. — a past master of both. He also belonged to St. Andrews Royal Arch chapter, Boston, and to the Sons of the American Revolution. Mr. Learnard's wife died several years ago, and he had no children. He is survived by two nephews, a grandnephew (Stephen F. Learnard, M.I.T.'52) and a grandniece. — ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton, Mass.

1901

I regret to report the death of G. Victor Sammet, 77, of Newton Center on April 13 after a brief illness. He was a pioneer in the development of plastics and a member of the board of the Massachusetts Mutual Life Insurance Co. After graduating from M.I.T. he later attended, as a Rhodes Scholar, the University of Leipzig, Germany, where he received his doctorate in chemistry. On his return to this country he joined the chemical department of the Merrimac Chemical Company in Everett. In 1907 he became the cofounder and president of the Northern Industrial Chemical Company. He re-

mained president until his retirement in 1956. The company developed many moulding compounds and techniques used in plastics. He was one of the founders of the Plastics Manufacturing Group, which later developed into the Society of Plastics Industry, Inc. He leaves a wife, a son, and a sister.

A. L. Galusha, II, in New Jersey, has sent in news about himself several times. I have recently received from his wife newspaper clippings about him which, I think, will be of interest. He has just passed his 80th birthday and is still going strong. He holds 49 patents on automatic gas producer plants for industrial heat. He is chief engineer of the gas equipment division of the Welman Engineering Company of New York. He has been commuting from his home in New Jersey to New York for 27 years. He and his wife have a son, a daughter, and eight grandchildren. His life has been devoted to making better heat at less cost.

Bill Farnham, VI, who has reported before, says: "Mrs. Farnham and I have been living in this small hotel (Alvord) in East Orange, N. J., since 1925. I retired in 1937. On the whole we enjoy good health." From Phil Moore: "Mrs. Moore and I spent about six weeks in Arizona, returning in March. Our plans were a bit upset by a touch of pneumonia which started the day I got there and slowed me up for the whole time we were there. I'm fine now. We were delighted to find Henry and Mrs. Chambers on the train on the way west, and they were at the Arizona Inn where we stayed after I got over the pneumonia. We had many pleasant visits there. Guess we will stick here (in Maryland) for several months now. Ed and Grace Seaver stopped in for lunch the middle of October on their way south, and we hope to see them on their way home. Arthur and Florence Hayden live what would be about two miles from us if we were crows, but by road it is about 18 miles. Had lunch with them in January. Arthur continues to explore the rivers of the eastern shore in his canoe. He has done them all from source to mouth, a very interesting study. He explores the off shores by swimming, at which he is remarkably strong."

Bob Derby informs me as follows: "Have just returned from a two months' trip around South America during which I went through the Panama Canal and the Strait of Magellan. I also visited the capitals of Peru, Chili, Argentina, Uruguay, and Brazil, all of which I had been to before. A day in the Falkland Islands was a high light of the trip."

I would welcome more replies to the class letter. A reminder not to forget the reunion which, when you read this, will be next June at Dedham, Mass. A pleasant summer to you all. — THEODORE H. TAFT, *Secretary*, Box 124, Jaffrey, N. H. WILLARD W. DOW, *Assistant Secretary*, 78 Elm Street, Cohasset, Mass.

1903

Tom Sears is to be congratulated on being the recipient of a resolution of appreciation, adopted at the Braintree, Mass., annual Town Meeting, for service rendered to the town of Braintree over a period of nearly 50 years. Following the destruction by fire of the Braintree Town Hall in 1911, he was appointed a member of a fire investigation committee. His report and recommendations for better fire protection were so well received that he later was made chairman of the committee to purchase motor-driven pumping equipment. In 1927 he was elected commissioner of the Water Department Board, and in 1945 he became chairman. During his term of office the water supply has been greatly improved and extended, and the work of the Department carried on with vision, honesty, and efficiency. The resolution particularly stresses his activities as a public-spirited Christian citizen.

Also prominent in water supply circles is Howard S. Morse, Chairman of the board of the Indianapolis Water Company. He is one of four outstanding engineers of the world elected in 1957 to honorary membership in the American Society of Civil Engineers.

Ike Atwood writes: "Mrs. Atwood and I have recently returned from a pleasure trip to South America, traveling entirely by plane 15,000 miles or more. We spent three days at Cabo Blanco Fishing Club, near Talara, Peru, where world records have been made catching black and striped marlin by rod and reel; but we cannot boast of our breaking any records. Lima, Peru, the City of Kings, as it is called, is most interesting; and, in fact, Peru is the most astonishing country in the world. Archaeologists have not fathomed the mystery of the civilization of the Incas, who ruled Peru for several centuries. The people of Lima seem very conservative; and, as one observes them in the streets of the city, they seem to be a blending of the Indian, the Spanish colonial past, and the Twentieth Century present.

"Santiago, Chile, was very interesting also; but the people seem less Latin and more of European ancestry. The flight from Santiago to Buenos Aires, Argentina, was really a thrill, passing over the highest mountain peaks of the Andes and the highest mountain peaks in the world other than, perhaps, The Himalayas. Buenos Aires is called the Paris of South America and is the largest city in South America. The people seem very sophisticated and were anticipating the new change in government under their leader, Frondizi.

"Montevideo in Uruguay, a picturesque capital on the seacoast and the river Rio de la Plata, was our next stop of interest. Uruguay is called 'The Welfare State,' has practically all of its industries nationalized, and is an example of what our economic condition might be should we continue thuswise. Rio de Janeiro in Brazil is the wonder city. White buildings; blue, blue water; purple mountains; and surmounting all, the famous statue, Christ the Redeemer, towering over the city 2,400 feet above, was a panorama amazing to behold. Indeed it was a delightful trip!"

Our thanks are due Walter H. Adams for contacting some 14 of our members living in California to arrange a reunion locally.

The *Boston Herald* of May 22 recorded the death of our treasurer, Frederic A. Eustis, on the 21st: "Frederic Augustus Eustis, 80, chemical and metallurgical engineer, of 1452 Canton Avenue, Milton, died yesterday at the Milton Hospital. Son of a mining engineer, Mr. Eustis was interested in research work throughout his life. He had 22 patents recorded in his own name, while others were in the names of coworkers.

"He was born October 7, 1877, in Milton, the son of Edith Hemenway and William Ellery Channing Eustis. He received his A.B. degree from Harvard in 1901 and his A.M. degree the following year. He was awarded an S.M. degree by M.I.T. in 1903 and an Sc.D. degree by Harvard in 1915.

"Mr. Eustis was president and for many years director of the Compressed Gas Association, Inc. He was a member of the American Institute of Mining, Metallurgical, and Petroleum Engineers; the Mining and Metallurgical Society; and the American Chemical Society. He was a director, secretary, and treasurer of the Eustis Mining Co. and the Virginia Smelting Co.; director of the Consolidated Copper and Sulfur Co.; vice-president and director of the Sulfide Ore Process Co.; and director of the Penobscot Chemical Fibre Co. of Boston. During World War I he worked with the U.S. Shipping Board in Washington. . . .

"He married Edith Tileston in 1908. She died in 1927, leaving six children. He married Muriel Barker Churchill in 1937. She survives him. Also surviving are four daughters; three sons; 23 grandchildren; one great-granddaughter; and a twin brother, Augustus Hemenway Eustis of Milton." — LEROY B. GOULD, *Secretary*, 36 Oxford Road, Newton Centre 59, Mass.

1904

When the request for class notes came from The Review Office a few days ago there wasn't an item to report. Then your volunteer class secretaries received copies of the annual report of Technicolor from our classmate Herb Kalmus. There used to be an old Mississippi River song which began as follows:

"Oh the Nellie Peck is a very fine boat,
With a very fine captain too. He sits up
there on the hurricane deck, And keeps
his eye on the crew."

Herb is apparently doing the same thing for the good ship Technicolor. We all know what a tough time the moving picture business has been having lately, but Herb's report shows that he is not moaning about the past but looking for new ways to keep his company in the black. Their operations in England, France, and Italy are doing well; and in this country they have opened laboratories in New York and Hollywood for processing and printing amateur colored films. We don't know how you keep up the pace, Herb, but good luck to you anyhow.

When you read these notes the 1958 Alumni Day will be history. Next year we will celebrate our 55th. What shall we do? Keep the thought in mind and be ready to make some suggestions. Meanwhile send us something about your

summer activities for use in the November issue of The Review. — EUGENE H. RUSSELL, JR., *Treasurer*, 82 Devonshire Street, Boston, Mass. CARLE R. HAYWARD, *Secretary*, Room 35-304, M.I.T., Cambridge 39, Mass.

1905

While in Lowell the other day I called on Roy Lovejoy, IX, at his factory, where he and his father and grandfather have been making machine knives for hundreds of years. Roy is still on top of the job every day except when sojourning in New Orleans. Upon receiving his May issue of The Review, in which he read Willard Simpson's "brag" about the big snow in Texas, Roy wrote me as follows: "One item particularly is worth commenting on, namely the November snowstorm mentioned by our Texas classmate of about 2 inches. You know those Texans are great boasters, but I just can't let Texas get away with this big blizzard. I admit it is huge for there; but I must stand up for Louisiana, because this winter while I was in New Orleans they had the biggest snowfall in 59 years. That goes back before my time, as I made my initial visit to that famous city in 1906 and have never missed a trip at least once every year since then. That February storm deposited 2 inches in the garden of the house where we were living, actual measurement. Snow is so rare that the last trace there was 35 years ago. It stayed on the ground for 36 hours; that was a record for length, I understand, even exceeding the storm of 59 years before.

"Tulane University closed for the day, Newcomb College did the same; all schools closed so the children could go out in the snow. On Tulane campus the college boys made snow men and had regular battles with snowballs. The girls at Newcomb did the same. In fact, passers on the streets had to be good dodgers or get hit. In town the clerks in the shops kept coming out to see the white feathers. People made snow figures and put them on the hoods of the cars and drove around town with horns blowing; a regular gala day, almost as gay as Mardi Gras itself. Of course the snow made the streets, where there are over- and underpasses, rather difficult to navigate by motor car drivers, who do not know how to handle such conditions; anyway, several of these overpasses were closed on account of the snow. As my wife's sister was at that time in a hospital, the nurses went out and got snow and brought it in to show their patients and to let them feel it. Of course it was a beautiful sight, as the snow was all over the palms, live oaks; and at that time the flowers were in good bloom along Saint Charles Avenue and in the parks, so the colors were out of this world. I understand all the color film in the city was bought up. We just can't let Texas get away with their snowstorm without boasting of ours in Louisiana."

Many times I have tried to get Herman Eisele, XIII, to "give." Evidently his daughter took pity on me and has written: "Your letter of February 6, 1958, has been lying on Mr. Eisele's desk since its receipt. I am sure father wanted to write you telling you how much he enjoys reading about the men in his Class at M.I.T. in your column. However, in direct opposite of Robert Luce's situation where retirement tends to postpone action, Mr. Eisele is still in the 'parade'; and his daily duties, problems, decisions make it necessary for him to postpone his extracurricular activities. When I call his attention now and then to your letter he says, 'You tell him.' In my previous letter I advised that he had recently celebrated his 76th birthday — which appeared in your column as his *70th*. While you are all about the same age I realize, it is still an accomplishment to be maintaining an independent consulting engineering practice with its many problems at that age. You were almost making him a child prodigy! Otherwise, there is little to report about him. He and mother are enjoying quiet living in a city apartment, with little outside activity except for short jaunts on Sunday to nearby points of interest. He extends his best to you and the others in the Class of '05."

Now for the sadder items. Waldo V. Lyon, VI, died at his home in Winchester, Mass., on April 24, 1958. Waldo retired from M.I.T. as professor emeritus of electrical engineering in 1952, having taught at the Institute for 47 years. The *Boston Herald* of April 25 carried this obituary: "He wrote definitive books and papers on applications of the method of symmetrical components in alternating current machinery. Born in Brooklyn, N. Y., he spent his childhood in Woonsocket, R. I., and came to Boston to live when he entered M.I.T., soon after the turn of the century. He was graduated from M.I.T. in 1905 with the degree of bachelor of science, and was named to the Faculty. Professor Lyon was a fellow of the American Institute of Electrical Engineers. He leaves his wife, Gladys H. (Blanchard) Lyon; and a son, Lieutenant Commander Waldo Blanchard Lyon, U. S. Navy Medical Service Corps, Port Deposit, Md."

William D. Clarke, I, died on April 28, 1958, at the Veterans' Hospital in Portland, Ore., at the age of 78. He was born in Tacoma and lived there practically all his life since leaving M.I.T. His daughter sent in a clipping from a Tacoma paper, from which I quote: "Prior to his retirement eight years ago, Mr. Clarke was an appraiser for the War Asset Administration in Tacoma and Seattle. Since that time he had served as treasurer and financial secretary for the First Congregational Church, in which he held membership. During World War II, Mr. Clarke was industrial analyst for the Tacoma branch office of the War Production Board. Mr. Clarke attended public schools in Tacoma and Portland and took his college training at Pacific University and Amherst College, then received his engineering degree at M.I.T. He engaged in railroad location and construction in Washington, Oregon, and California, then was in private civil engineering practice in Portland. For 14 years he was a division engineer for the Oregon State Highway Department, then joined the department of railways, Oregon Public Service Commission. During World War I he was captain in the Corps of Engineers. From 1933-43 he was in the National Park Service, western region. This period included three years as project superintendent in Rainier National Park and other parks in Washington. Mr. Clarke was a member of Beta Theta Pi Fraternity, the American Society of Civil Engineers, Northwest Society of Highway Engineers, Society of American Military Engineers, and the Sons of the American Revolution. Surviving are his wife, Mary Bailey Clarke, whom he married in Forest Grove, Ore., in 1906; a daughter, Mrs. Evans Hamilton; a son, Robert B. Clarke, and five grandsons, all of Portland; and two brothers, A. H. Clarke of St. Louis, Mo., and H. H. Clarke of Eugene, Ore." — FRED W. GOLDTHWAIT, *Secretary*, 57 Nowell Road, Melrose, Mass. GILBERT S. TOWER, *Assistant Secretary*, 35 North Main Street, Cohasset, Mass.

1906

When our grandchildren were small they often let us in on some deep, dark secret starting with — "You know sumpin?" Well I'll share a secret with you — the majority of Tech men, and women, are bashful. We like to read and know about the careers and achievements of our classmates but apparently hesitate to divulge any information about ourselves; which, to be sure, is a quite common characteristic of people in general. For example, when Jim sent around the information blanks for material for the contemplated "Thirty Years After," of the 84 returned, nine gave no data and seven said they would, if and when. That is almost 20 per cent, plus the hundred or two that didn't come back. Nevertheless, we secretaries get a break now and then by seizing an opportunity.

Early in May the Alumni Office sent me the preliminary Alumni Day card that Dick McKay, III, had returned saying he did not hope to attend the doings this year — for a very good reason, as his youngest son was to graduate in Law that same day. As the card also contained some information about the other three sons, I did some research on Dick's career and sent the outline out to Dubuque with a letter asking him to fill in the blanks. It came back promptly with all the details and a very helpful letter from his son James, much of which is contained in what follows. Richard Vincent McKay was born October 17, 1884, in East Milton, Mass.; prepared at Milton High School; entered and graduated with us, being a member of the Mining Engineering Society and writing his thesis on "The Concentration of a Lead-Zinc Ore from New Hampshire." He went to work for the Pennsylvania Steel Co. at the Lebanon Works and was soon transferred to the Steelton Works, becoming assistant superintendent of furnaces in 1909. In 1910 Dick went to Cuba to lay the groundwork for the extraction of cobalt, and so forth, with the Spanish American Iron Co. From 1912-22 he was superintendent of Blast Furnaces with the Pennsylvania (later Bethlehem) Steel Co. in Steelton. In World War I he was "in charge of operation of six blast furnaces and construction of a seventh — working

on war orders for the U. S. and Allies." In 1922 Dick moved to Dubuque to become secretary-treasurer-manager of McFadden Coffee and Spice Co. From 1942 until he retired in 1956, Dick held the same positions with the Key City Gas Co. there; and it was largely through his contacts with the Federal Power Commission that natural gas was brought into the Dubuque area.

On June 6, 1913, he married Edith K. McFadden of Dubuque, who died in 1946. They had four sons. Richard Jr. is a doctor there, having graduated from Notre Dame in '39 and the University of Chicago in '42. He married Betty Ryan of Rochester, N. Y., and they have four children. James M., D.D.S. of Dubuque, graduated from Loras College in '40 and the University of Iowa in '42. He married Harriet Nemmers, and they have two children. The third son, John K., was an Annapolis graduate in '45, is now living in Marshalltown, and married Jean O'Leary. They have four children. The youngest, Thomas W., Dick said made the dean's list his first term at M.I.T. in '52; but he decided he didn't want science or engineering and went back to Iowa, entering the State University and getting his bachelor of science in commerce in '55, then taking law.

As James says in his letter: "The few lines on the other page (details of Dick's career) are all true but seem so little to describe a man of my father's character — a sincere, loyal, hard-working man of the very highest ideals to which he has adhered, frequently to his own personal detriment. During his years in Dubuque, he has served as president of the Chamber of Commerce, Rotary Club, Planning and Zoning Commission, and board of directors of Nativity Catholic Church since its inception in 1923. He was on the founding board and served as president of the Community Chest, and has been a generous supporter of all the worth-while projects that have needed a boost here. Besides all of this he has been the rootin' tootin'ist Alumnus that M.I.T. could have in this area — as you well know from his efforts for his alma mater [Dick has been an Educational Councilor through the years and is regional chairman]. He is still interviewing boys in spite of feeling like a wet sponge most of the time. His only regret is that with four sons, none of them has graduated from 'God's House.'"

We can appreciate why Dick might feel that way about the boys; but Jiminy Crickets, he can't help feeling plenty proud, too, of the schooling they did get and the use they are making of it. It is fortunate that the two older sons are settled in Dubuque, for since January Dick has been having a mean time. In the course of an examination, preliminary to the removal of cataracts, an intestinal lesion was discovered and abdominal surgery performed. In May he was still in the hospital making a slow recovery; and with his cheerful, optimistic disposition he ought to be back in circulation by June all set to attend the graduation of his lawyer son, Thomas. Cheerio, Dick.

Here's some news from and about another miner — Harold Cleveland Plummer. In the May notes some details were included of Ralph Jackson's career, his death having occurred in Phoenix, "probably late January or early February." Being of a mind to fix the date more exactly, I wrote Harold in April seeking his help and received full details. Ralph's wife had died in 1955 and he went out to Phoenix a year later to live with Michael Rhodes, thought to be a stepson, who got him into the Veterans Administration Hospital there, where he died on December 30, 1957, of a cardiac insufficiency. Of their three children, one son at that time was in Korea with a wife in California; another son in California; and a daughter in New York.

Harold Plummer's co-operation is doubly appreciated because he is quite blind, I was sorry to learn. To quote from the letter, signed by Adelaide M. Hicks: "I am writing this for Mr. Harold Plummer, who has been quite blind for several years. Having been widowed in March, 1953, and having no children, he is forced to engage someone to assist him. Letter writing is almost taboo for him, and he has therefore asked me to follow through your inquiries." Adelaide surely did. I had also asked Harold if he ever contacted Charlie Willis now — another miner living in Phoenix — and was told that he hadn't seen him for some time but had been listening to the radio that evening and "heard mention of Mr. Willis in connection with the possible 'parity' on zinc, lead, and so forth.'" It's Guy Ruggles who gets around to see his fellow miners (and other classmates), as he had visited Harold "and writes regularly from Cananea, Mexico."

Marion has been overheard telling others that Ned never discards anything, especially anything pertaining to M.I.T. Mebbe so, and when I recently opened a box that had come east when we moved from Cleveland in 1916 did I find some interesting and valuable class records! Among them was the menu and list of speakers and their subjects for the Course VI dinner on April 10, 1906, Zum Bürger Bräu. I then evidently started a practice, which I have followed ever since, of getting the signatures of those present. On the back of the card are 40 names, including three professors — Clifford, Laws, and Puffer. What memories!

Spent an afternoon with Jim end of April, being his guest at a Red Sox — Kansas City ball game; but we spent most of the time talking about the game and not much about class affairs. He did agree that a call for class dues might be in order next year, and a start on planning for our 55th — the centennial for the Institute. — EDWARD B. ROWE, *Secretary*, 11 Cushing Road, Wellesley Hills 81, Mass.

1907

This is one of the occasional months when I am very short on news regarding '07 men. Indirectly I have learned that when Kenneth Chipman retired, in 1949, from his work as chief topographical engineer of the Geological Survey of Canada, he was made a life member of the Canadian Institute of Mining and Metallurgy, and also an honorary member of the Canadian Institute of Surveying and Photogrammetry. Evidently he and the work that he did in the Survey for nearly 42 years were highly regarded by the engineers of Canada. On April 28 I received a note from Don Robbins saying that his wife, Helen, died very suddenly on April 20, from an acute coronary embolism. She and Don had just arrived at their home at 85 Mathewson Road, Barrington, R. I., on April 19, at noon, from their winter sojourn at Clearwater Beach, Fla. About two hours later a pain in her left arm, of which she had had occasional intimations for a few days, became more intense and acute; and the end came at about 3:00 A.M. on April 20. I wrote a letter to Don expressing most sincere sympathy, both personally and on behalf of the Class.

A cordial letter came to me on May 12 from J. E. Tresnon, whose address is 306 West Cypress Street, Phoenix, Ariz. John has been in very poor health for many years, but has retained a really fine outlook on life and a real sense of humor. Here's a sentence taken from this recent letter: "Have not been out of the house for over a year. I geuss that the only reason that I am still here is that I have not smoked or boozed or strained my heart or excited my nervous system, so that now my body does not know enough to quit." He says that he gets his pleasures, and lots of them, from Boston, following the Celtics basketball team and Ted Williams and the Red Sox. I suggest that you men who read this write immediately a cheerful, newsy letter to this Arizona classmate. — BRYANT NICHOLS, *President* and *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary* and *Treasurer*, 18 Summit Street, Whitinsville, Mass.

1908

Our fourth and final dinner meeting of the 1957-58 season was held at the M.I.T. Faculty Club on Wednesday, May 7, at 6:00 P.M. Henry and Clara Sewell, as well as your Secretary, had arrived a little early and were able to capture two tables in the corner of the Cocktail Lounge.

We had the best turnout of the year with Bunny Ames, Bill Booth, Nick Carter, Fred Cole, Leslie Ellis, George Freethy, Sam Hatch, Paul Norton, Henry Sewell, and Joe Wattles answering the roll call. In addition we were favored with several guests: Mesdames Ames, Ellis, Freethy, Hatch, Sewell, and Wattles. About 6:30 we adjourned to Private Dining Room #1 for the very excellent dinner that Mine Host Morrison always provides. After dinner Joe Wattles showed us some beautiful and interesting Kodachromes taken in Mexico and Guatemala on one of the Wattleses' numerous trips about the world. We adjourned about 9:00 P.M. after a very enjoyable evening.

Myron Davis and his wife, after a winter in Florida, spent the month of May in West Harwich on the Cape. George Schobinger has a new office in the Philadelphia National Bank Building, Broad and Chestnut Streets, Philadelphia, Pa., Room 1821. Understand he is spending two days a week in Washington,

D. C., as consultant to the International Finance Corporation. Bill Barton has become a resident of Sarasota, Fla. — 1940 Webber Street. We have learned from Alexander Yereance'11 that Edgar Williams, who is a fellow of the American Institute of Architects, is a member of the Architectural Advisory Panel for the Office of Foreign Buildings, Department of State, Washington, D. C. Dick Collins is secretary of the Eastham, Mass., Citizens Committee, who are hoping to avert state or federal acquisition of beach front property in the town. The *Cape Cod Standard-Times* of April 28 had an account of a recent meeting of the committee and included an excellent picture of Dick. Thanks are due George Belcher for sending us the information.

The thanks of the Class are extended to all the wives who subscribed to our 50th Year Gift to the Institute in memory of our departed classmates.

The first dinner meeting of the 1958-59 season will be held at the M.I.T. Faculty Club early in November. Plan to be with us. Hope you all have a happy summer and will tell us about it. News is always welcome. — H. Leston Carter, *Secretary,* 14 Roslyn Road, Waban 68, Mass. Leslie B. Ellis, *Treasurer,* 230 Melrose Street, Melrose 76, Mass.

1909

Probably the Class is awaiting anxiously the results of the recent balloting. The returns have dropped to a trickle, one every two or three days before sending these notes to press; so we can safely assume that further balloting will not change the results. Seventy-three ballots were received with the voting as follows: President, Maurice R. Scharff, XI, 72; Vice-president, Thomas C. Desmond, I, 73; Secretary, Chester L. Dawes, VI, 71. This is almost as unanimous as the current elections in Russia. There was some side information on the cards such as, for example, latest addresses and one or two commendations for the administration. We were pleased to receive a card from Ray (Scissors) Allen, II, from Memphis, Tenn., one of our outstanding Tech Show actors. We hope that he and many others from whom we have not heard for some time will write and tell us what they have done and are now doing. Karl Godfrey, VI, captain of our sophomore football team wrote: "Hi, Chet, could you still catch a forward pass if I threw it?" We should point out that Karl was a track star at Exeter before coming to Tech, and many prospective tacklers could only look around to see where he had gone.

The Class is most fortunate in its choice of president and vice-president, particularly as our 50th anniversary is approaching. Molly was our first class president and since has become a consulting engineer of world-wide renown. Our class notes have told of his going to Europe, Asia, the Far East, and only recently to South America to advise on power developments. Tom in his earlier career quickly made a reputation as an engineer in the construction of many large buildings in New York. In 1931 he was elected state senator in New York and continued to serve for 28 years until his recent retirement. We all know of the constructive legislation which he has sponsored and the many positions he has held, such as a member of the M.I.T. Corporation and membership on the visiting committees at both M.I.T. and Harvard.

Recently we received an announcement of the wedding of Miss Judith Fay Marshall of Jupiter, Fla., to Reginald Lamont Jones, Jr., the reception having been held at the Englewood Field Club, New Jersey. Peter B. Jones served as best man for his brother. It occurred to us that the Class would be interested in knowing something about the family. Marion writes to us quite frequently and has supplied much of the details. She now lives by herself at 160 Summit Avenue, Summit, N. J, but spends considerable time visiting among her children and grandchildren. Betty, the oldest child, graduated from Wellesley and is now Mrs. Donald L. Fuchs and lives in Chappaqua, N. Y. Don is a graduate of Williams College and is with the Teachers Insurance and Annuity Association. They have four adorable little girls: Kathryn, 7; Barbara, 5; Betsy, 3; and Dorothy, 11 months. Marion states: "Peter (her younger son) and Barbara have been married four years this June and are living two miles from me in Short Hills, New Jersey. Pete had almost four years in the Air Force, returned to Amherst College in the fall of 1954, and graduated in June, 1954. He is working in the Personnel Department at the Esso Refinery."

Reg, Jr., was in the Air Force for just over three years: went in as a private, had four months in Japan, came back to Officer Candidate School, taught at Lowry Air Force Base in Denver, and resigned after being discharged as a first lieutenant. He is an alumnus of Phillips Exeter Academy and Princeton University and is now an accountant with Arthur Andersen. Marion states: "My lovely new daughter was Judith Fay Marshall who has been working in New York since graduating from Pine Manor College. Judy is continuing as a secretary to the young Mr. Watson, President of I.B.M. World Organization. She and Reg, Jr., are living in New York City, whence both can walk to their respective places of employment." We can understand why Marion is so happy with such a family of children and grandchildren.

Art Shaw, I, wrote on May 8: "We have been back a couple of weeks after two months in Florida, which we enjoyed though having to adjust to weather somewhat less warm and sunny than normal." He enclosed four pages of the *Dallas Morning News* of April 22, which was devoted entirely to the "Grand Opening of Guardian Savings and Loan Association" of which Ballard Burgher, I, is president. Guardian started in business during the great depression. Due to good business management it has expanded until it now has over $12,000,000 invested in mortgages and has total assets which exceed $15,000,000. The occasion for the publicity was the opening of new office quarters, a four-story-and-basement building. There was a three-day open house with tours and souvenirs for everyone, special gifts for those who opened new accounts or increased their own, as well as door prizes for all who attended. On the front page is a photograph of President Burgher sitting at his desk in his new office with his secretary standing nearby. The paper shows several interior photographs, tells of the history of the Association and its many banking policies. Ballard illustrates the fact that a Tech training for engineers is a good training for bankers as well. We might add that he made a generous contribution towards the 50th Anniversary Fund.

Again, this number marks the last for the 1957-58 year. We begin again in November. The coming year is a momentous one for us all, for it culminates in our 50th Anniversary and there is much to do to prepare for it. Where has the time gone? The class officers wish everyone a most pleasant summer. — Chester L. Dawes, *Secretary,* Pierce Hall, Harvard University, Cambridge 38, Mass. George E. Wallis, *Assistant Secretary,* 185 Main Street, Wenham, Mass.

1910

On April 30 Hal Billings called me and gave me the sad news that Cliff Hield had passed away on the 28th. I understand that Cliff had not been in the best of health for the past year or so following a serious operation. We shall miss Cliff. I believe he attended every class reunion since graduation. Also, as Alumni Class President he wrote me at least once a month giving me news of classmates or endeavoring to stimulate me to better efforts to obtain such news. As your secretary, I have written a letter of sympathy to Mrs. Hield from the Class.

Just as I was mailing last month's notes to The Review Office I received the information of the passing of Everett Follansbee and managed to include just a brief notice. Since then I have received several notices, and the following is from the *Boston Globe:* "Everett M. H. Follansbee, 72, retired technical superintendent of the Simplex Wire and Cable Co. of Cambridge, died today in Anna Jaques Hospital. Mr. Follansbee was an authority on rubber. A graduate of Newburyport High School, he was graduated from Massachusetts Institute of Technology in 1910 and joined Simplex' chemical laboratory department. He became chief chemist in 1917. He was the author of many articles in rubber and chemical journals. Mr. Follansbee had been vice-chairman of the School of Moseley Woods for many years, and had been president of the Historical Society of Ould Newbury and trustee of the Worcester Memorial Hospital."

Carroll Benton is keeping me advised of the activities of the New York classmates, and the following was received early this month: "Just a few lines to let you know about the April luncheon, which I was unable to attend because of the Caribbean cruise. Just talked with Al Hague on the phone and he told me they had about the maximum possible in attendance at the luncheon on April 16 — ten all told, as follows: Ray Jacoby, Gordon Holbrook, George Magee, Carroll Shaw, Erford Potter, Fred Dewey, Henry Schleicher, Jim Tripp, Al Hague, and

Larry Hemmenway. Pretty good for a bunch that has been graduated nearly 50 years. Next luncheon is on the 21st of this month [May]. Hope we can do as well as last month. Will then probably take a recess until September, as it is rather difficult to get the fellows together during the summer months. Received your letter of March 25 just before we left on our trip to the West Indies on the *Mauretania*. We were gone 12 days; stopped at six ports, including St. Thomas, Martinique, Trinidad, Curacao, Jamaica, and Haiti. We found all of these places interesting, especially Jamaica. All in all, a smooth trip (my wife might not agree to that). We think, though, that we prefer a smaller boat, such as the one we went on two years ago (Grace Line — *Santa Rosa).*"

Dud Clapp has again been indulging in literary efforts when he wrote verses read by Professor Jerome C. Hunsacker'12 at the Honors Night Dinner after he was presented the Royal Aeronautical Society Gold Medal. — HERBERT S. CLEVERDON, *Secretary,* 120 Tremont Street, Boston 8, Mass.

1911

The headline this month concerns Dennie. At the time these notes are being typed to meet the May 15 deadline, our Class Secretary is hospitalized as the result of a coronary thrombosis suffered on April 21. Returning home from his office at the end of the day, Dennie noticed that a bundle he was carrying seemed to be getting very heavy. By the time he had reached home he was in considerable pain but walked to his doctor's office nearby. The doctor called a cab and took Dennie to the Framingham Union Hospital, also nearby. He had been given a clean bill of health at a regular medical checkup a short time before. His first week in the hospital was rather rough, but it was followed by a quick pickup; and when Mabel and I (Jack) called on him May 9, he was his usual affable self. The ball game to be broadcast that evening was his immediate interest, and he was readying his forms for scoring. Dennie reported himself as "at a stage of recovery when he should abstain from physical effort." Get well messages had been arriving at the appropriate average of 11 a day. Sallie Denison told us that she had made a hurried trip home from Maine, where she had just arrived to open their Cornish house for the summer. Dennie expects to be back in circulation for Alumni Day. I trust that this report will be an anticlimax for those of you who attended.

Frank G. Smith, III, writes from Hawaii: "Have just received a card from Don Stevens, who writes he had been here for five weeks and on his return learned I live here. Well, that's the way it goes. I hope you will get on your feet again and take it easy. Read and watch television or get some tubes of paint and make scratches — I do; and when I see some on public exhibition along the fence in the park on Saturdays, I think mine could stand or hang without being jeered at. Most of the aloha and Island glamour has worn off. I tell Don it is like any other city here now. The population is 80 to 90 per cent oriental of some kind, and over 50 per cent are under 25 years old. At the rate babies are being born, it will remain so for some time."

A letter from Don Stevens touches lightly on his trip: "This trip to Hawaii took me to good health — marvelous. I gained 10 pounds or more and slept 'like a log' with the song of the surf in my ears. From balcony — or even from bed — I could see moonlight or sunrise. Even as I have kept active all these years, I have more so in Hawaii. Lois loved it, too, and she needed a rest from the hundred things a woman takes in stride." Well, there you have it; Hawaii as seen by the newcomer Don versus the old-timer Frank.

Luis de Florez is in the news again. A release from the Navy Department announces the first meeting of the Navy's newly formed Advisory Board on Scientific Education. The 11-man board of "distinguished leaders from the field of business, education, and the military" was formed by Secretary of the Navy Gates to evaluate the Navy's education programs and to consider the education needed by officers and men to meet the rapid technological changes of the future. Its membership includes Rear Admiral Luis de Florez, U. S. Navy Reserve (retired), and Dr. Julius A. Stratton, M.I.T. Luis is also mentioned in the *Aeronautical Engineering Review,* report of technical sessions, 26th annual meeting, Institute of the Aeronautical Sciences. He was chairman of the Instruments for High-Speed Aircraft session. And finally, the Council of Library Resources, Inc., in a bulletin of recent developments refers to contracts placed with both the de Florez Co. and Radio Corporation of America, for design plans for an automatic page turner to be used in copying printed book materials by photography, television, or telefacsimile.

Carl Richmond, I, reports the death on April 19 of John A. Proctor, VI. He was a high school classmate of Carl, at which time he became outstanding for his independent participation in what was then called "wireless telegraphy." John left Tech during his sophomore year. He was associated with Guglielmo Marconi, and was a former president of R.C.A. Victor Co. of Mass. Later he was assistant to the president of the General Electric Co.; and he retired recently as president of the Oxford Electric Co. of Chicago. In addition he held more than 100 basic patents in electronics and radio communication. In World War I, he was a lieutenant colonel in the Signal Corps. He leaves a son and two daughters.

Last month we reported the death of William Dewey Foster, IV, on April 4. Alec Yereance, I, represented the Class at the memorial ceremony held on April 13 at the American Institute of Architects Library in Washington, D. C. Alec says: "The ceremony was held in the library in the rear of the Octagon, headquarters of the A.I.A., which was designed by Bill, utilizing the stables of the old place most effectively. The property served as the residence of President and Dolly Madison after the British burned the White House in 1814. It has been beautifully restored, keeping the old courtyard and garden between the house and the library while adapting the whole place to modern use. There was a turnout which filled the library and overflowed into the garden. The librarian had arranged a display of photographs of some of the buildings Bill had designed, both in Washington and in other places, and copies of the books he had written — several volumes on houses in France, England, and the United States. He was also credited with the *White Pine Monographs,* published some years ago by Architectural Forum, which I know were highly prized by architects in New England at least. Tributes were paid by Leon Chatelain, Jr., President of the A.I.A.; E. R. Purves, Executive Director of the A.I.A.; Rear Admiral Neill Philips, U. S. Navy retired, of Georgetown; A. G. Wenley, President of the Cosmos Club; and H. H. Saylor'02, editor emeritus of the Journal of the A.I.A."

Remember the new Fund year starts July 1. The Class has always done well, and Dennie is hoping that we will do a lot better the next few years, since all money given during this period is credited toward our 50 year gift. — ORVILLE B. DENISON, *Secretary,* Chamber of Commerce, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary,* 588 Riverside Avenue, Medford 55, Mass.

1912

I spent a pleasant evening with Linc Barry and his wife recently as they came in for dinner before attending rehearsal at the Harvard Musical Association at the foot of our street. Linc has been a member of the orchestra for many years and comes in from Hingham to attend rehearsals regularly. He performs on the clarinet. Since retiring six years ago, the Barrys have traveled extensively; and Linc is at present chairman of the Boston United Fund Committee for allocation to agencies. He is also on the board of the South End Musical Center.

A good letter from Arch Eicher, who is with Merritt, Chapman, and Scott in Cleveland, reports that he and Agnes enjoyed a pleasant trip to Florida this winter. They drove down through the Kentucky hills stopping to visit their daughter, who is married to an Army man stationed at Fort Knox. They stopped off at Nashville and had a very pleasant reunion with his old friend Jerry Howard, Course I. They reminisced about the joint calls they made at Dana Hall, where Jerry used to perform startling tricks in magic for the goggling girls. Jerry has a mammoth workshop in his basement where he specializes in all sorts of furniture — tables and lamps and mahogany Lazy Susans. After a hearty breakfast consisting of a full course chicken dinner with all the trimmings — southern style — the Eichers shoved on for Florida. They had a pleasant visit with John Lenaerts in Venice, Fla. Jack keeps himself busy since retirement with his flower garden and fishing. He plans to come north to Pocasset for the summer with his wife — he has recently remarried.

Arch reports that he had dinner with Carl and Betty Rowley. He also reports that his office is very busy and there is

none of the gloom that seems to be rather prevalent around the rest of the country.

A letter from Bolmer Vaughan reports the death of George H. Rhodes, II. A letter from George's daughter reads as follows:

"I regret to inform you that my father, George H. Rhodes'12, passed away April 15, 1958. Knowing that you were a personal friend as well as assistant secretary of the Class, I am sending you the following information in the hopes that it may be included in the class notes of The Technology Review. Upon graduation, he went to Akron, Ohio, where he worked for the Goodyear Tire and Rubber Co. While at Goodyear he was commissioned to design and build the bakery for Bishop and Co., Los Angeles, Calif. He was employed by Bishop and Co. until the company was incorporated in the National Biscuit Co. At the time of his retirement in 1955, he had served N.B.C. for 42 years in Los Angeles, New York City, and Evanston, Ill. While in New York he was chief engineer.

"He moved to Santa Monica, Calif., after retiring, to be near his daughter (Carolyn) and her family. Surviving are his wife, May; his daughter (Carolyn), Mrs. Howard L. Thompson of Torrance, Calif.; three granddaughters, Janice, Pamela and Jill; and his sister, Mrs. George Haley of Colorado. Thanking you for your consideration in this matter. (signed) Mrs. Howard L. Thompson."

Bolmer continues: "George was one of the few boys I had more than a nodding acquaintance with, so I am sorry to see him go. We had exchanged messages at Christmas. This last year he had said that he was not feeling too well, but I did not get the impression it was this bad. I had urged him to come to the last reunion, but he said that there was so much to see in the West that he wanted to do that first. It is always a mistake to put it off, as it so often proves to be later than you think. Good old Lester was here in New York to embark for Rome when he had the stroke that finally proved his undoing.

"I trust you received my letter about his demise. Jennie writes that she is still pretty well done in and is only just now getting everything straightened out; she has had a long, hard row.

"George Sprowls was here last week for a meeting of the Amercan Rayon Institute, Inc., 350-5th Avenue, to which he had recently been appointed technical director, more especially as regards the improvement of rayon yarn and fabric for tires. He seems to be in fine form, but I could get no excuse out of him for not having been at the reunion." — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. C. BOLMER VAUGHAN, *Assistant Secretary*, 455 West 34th Street, New York 1, N. Y.

1913

When you read these notes the 45th reunion of the M.I.T. Class of 1913 will have been enjoyed by the visiting '13 men, so look for the fall issue of The Review. Now is the time to start saving for your 50th in 1963. Also, remember that the two Bills (Mattson and Brewster) will shortly communicate with you regarding your collections of "bills" for the 1913 donation to the Institute in 1963.

Yes, the "News Barrel" is just about devoid of "News." Sit thee down and send your dispensator a report of your good deeds as well as your misdeeds. It is very gratifying that about 100 loyal classmates have answered our several pieces of publicity regarding the 45th reunion. Quite a number of our mailings were stamped "Moved leaving no forwarding address"; several were returned due to the demise of certain classmates. All of your correspondents and you silent members could be of great assistance to the Alumni Office and your struggling Secretary if you would forward your correct or new addresses and also send in any clippings regarding recently deceased members. So endeth our morning lesson.

Since the middle of February many of your classmates have written something either greeting us enthusiastically regarding the approach of our 45th or relating their excuses. Yes, a goodly number who will not enjoy the shore breezes at the Oyster Harbors Club and the usual flow of "Warm air" have generously forwarded their dues to help defray the expenses of the reunion and current activities of your Secretary and Treasurer. To these unfortunates we extend the thanks of all of the reunioners. To you who have never paid any dues or have lost either your pen or checkbook, the Treasurer will still accept any delayed or extra checks which you may still have on hand at the reduced rate, $5.00, without the usual federal tax.

Herb Shaw writes: "Just a short note to let you know that I am retired. We are enjoying it very much, as I am busy with my hobby of restoring antique clocks. We have several in our home. We have every expectation of being with you at Oyster Harbors in June. We plan a Florida trip in March if the weather looks as if it might be good down there." Jack Farwell, one of our best news assistants, has written several times, and we quote in part: "I have just received Bill Mattson's preliminary report on the reunion program on June 13, 14, and 15. Jean and I are leaving Thursday, March 27, for Europe, returning the end of next month. Here in Cleveland for a couple of weeks — still in harness — should be at least partially retired like many of the '13 boys. Attached are some clippings from Florida, the land of sunshine publicity with cold waves as a diversion, showing Harold Rand — my sister lives in same town, Saint Cloud, and sent them to me; also one on Lester Gustin. Jeannie and I had dinner with Ellen and Bill Brewster recently in New York City and had the opportunity of a committee meeting to renew world and '13 events in general — including, of course, the reunion in June. Enclosed is a check for dues, sent to me here for mailing to you by Jeannie. She is so enthusiastic about '13 operations, policies, and such that she follows Tech Review to make sure I am 'instanding.' See you in June."

Jack Horsch types: "If I've read The Review correctly, you have now at least $30 collected. Will you have enough by June to stage a reunion? [Yes, with your five bucks and several others we *will* stage a reunion for you stags and stagies.] No special news at this time, except that our grandchildren now number five: two in Maine and three in New Jersey. Hope to be able to make the reunion but cannot say definitely at this writing." Thanks, Jack, for your transcript. Bob Bonney pens from California, and we quote in part: "I retired last August to our home on the Chesapeake. This winter the blizzards had no respect for the Mason and Dixon's line, so Mrs. Bonney and I came out here to California till the eastern seaboard thaws out. We expect to be home in April for spring planting and to see you at Oyser Harbors in June. Save us a room."

Mrs. Raymond White reminds us: "Before any more notices are sent for the reunion of the Class of 1913, I should tell you that Raymond W. White died, March 23, 1955." Thank you Viola. We apologize for the oversight of the Alumni Office and our Secretary. George Dempsey appends our first letter of March: "We are planning to be in Europe in June, but that could change. Please keep me advised of the activities." We have since been notified that George and family will definitely be across the "Pond" in June.

As usual Dutch Franzheim comes through with his tax to 1913 and a cheery letter, but we would prefer his presence nevertheless. We quote: "It is with a great deal of regret that I advise that I will be unable to attend the 45th reunion at Oyster Harbors Club in June. I am one of those unfortunates who cannot make long trips, except in emergencies — under which classification I am afraid this glorious and gory celebration would hardly come. Texas may have its advantages, but it certainly has separated me from my old New England pals the past few years. I suppose we should all be thankful that we are still alive and let it go at that. I know you will have a wonderful fiesta, and I hope that you will give those lucky enough to attend my continued warm regards. If any '13 men happen down this way, rest assured it will be a privilege and pleasure to see them again."

In the spirit of fun and joy of looking forward to another glorious reunion, we are reminded how unpredictable is life. We received the dues and a letter of regret from one of our most lovable classmates, Ken Reed; and then in the middle of April, we received a very sweet and sad letter from Ada Reed stating that Ken had gone to his Maker on March 30, 1958. Ada, my dear, we who have known you and Ken for these many years share your loss and grief. The *Cleveland Plain Dealer* of March 31, 1958, narrates the bare facts of Ken's life, and we shall summarize.

Kenneth W. Reed, a consulting mechanical engineer here since 1930, died at his home yesterday at 1839 Wymore Avenue, East Cleveland. Reed graduated from M.I.T. in 1913 and entered or joined the engineering staff of Warner and Swasey Co. He served as a machine designer, headed the research department and also the apprentice school until 1922; for the next eight years he was assistant chief engineer of the American Laundry Machinery Co. and later chief engineer

for several other machinery concerns. During World War II he was associated with the U. S. Government in charge of layout, design, and procurement of production equipment at the Ravenna Arsenal. Ken was a member and trustee of several engineering societies including that of Cleveland and the American Mechanical Engineers as well as the American Society for Engineering Education, American Society for Metals, and American Association for the Advancement of Science. He was a member for 40 years and a former trustee of Windermere Presbyterian Church. He is survived by his dear wife Ada, whom he married in 1916; also two daughters, Mrs. Dorothy V. Coates and Mrs. Margaret Clough; a son, Kenneth B. Reed; six grandchildren; a brother; and a sister. Let's all say a prayer at this time for that wonderful fellow, Ken Reed.

This brings to a close our feeble attempt to keep your minds forever on M.I.T. and especially the Class of 1913. Now to the *Bank* with your five bucks and advance payment for the 45th reunion. – GEORGE PHILIP CAPEN, *Secretary* and *Treasurer,* 60 Everett Street, Canton, Mass.

1914

Our May notes recorded the fact that J. Warren Horton had recently received the Navy Distinguished Civilian Service Award. We failed to include the information that Warren last year was the author of an important book, *Fundamentals of Sonar.* To the uninitiated, sonar is to underwater detection what radar is to aerial detection. The citation in connection with his award states: "The book, which establishes a landmark in naval science, is the first fully modern and comprehensive textbook devoted exclusively to the field of sonar and its applications. It provides a long-needed reference work for scientists and engineers in the field. In addition to its technical value, the book will be invaluable in training new scientists and engineers and should serve to inspire others to enter the field. The work is a monument to the exceptional professional competence, technical ability, singleness of purpose, and unflagging enthusiasm of Dr. Horton."

As these notes are written in May, we have about one year to go before our 45th reunion will take place. Charlie tells us that he has not heard from many of you in response to his recent letter, inviting suggestions about the reunion, its location, and any other ideas. Unless there is a strong feeling to the contrary, the chances are that the reunion will be scheduled at the Sheldon House in Pine Orchard, Conn., where we have enjoyed our recent well-attended reunions. Drop Charlie a note if you have any better ideas. Now that a large proportion of the Class has retired from active work, we should have a good turnout, perhaps even better proportionately than we have had in the past.

And speaking of retirement, as you read these notes your Assistant Secretary will be severing his connection with the Bell Telephone Laboratories after some 42 years with the Bell System. It does not seem so long. His plans for the immediate future include engaging in some consulting work, which will take up about half his time, and also moving to Maine, where several other classmates have been known to exist happily, at least in the summertime. – C. P. FISKE, *President,* Cold Spring Farm, Bath, Maine. H. B. RICHMOND, *Secretary,* 100 Memorial Drive, Cambridge 42, Mass. H. A. AFFEL, *Assistant Secretary,* 120 Woodland Avenue, Summit, N. J.

1915

At this writing – May 15 – we are all looking forward to the pleasure of welcoming and seeing a lot of you with your guests at the annual Class Cocktail Party before the Alumni dinner. Ray Walcott is doing a grand job of watching over the monthly class luncheons at the New York M.I.T. Club in the Hotel Biltmore, New York City. The 1915 luncheons fall on the Wednesday of the first full week in each month and will be held on July 9, August 6, September 3, October 8, November 5, December 3. This is an invitation to drop in at the Club. Membership is not required. Ray will be there each first Wednesday to greet you. Nice going Ray – another example of devoted interest for 1915.

Lucie and Harry Murphy are enjoying a long western trip. Lucie wrote from San Francisco that Harry is feeling much better following a recent illness there. Keep it up Harry, for a quick and complete recovery. We miss you here.

Here's a fine letter from Parry Keller, which, apologetically, I failed to give you before. You can readily see how he is enjoying his retirement. "I retired last June 1. Six months later I seriously question if 'retired' is the right word for the situation. Personally, I do not feel that I have retired or been retired. I am at a loss for just the right word. I have concluded that I have changed my way of life. I am just as active as I have ever been except in different ways. During the summer and early fall I did quite a lot of traveling in various parts of the country. Also, I have had more time to spend on photography. For this fall, I am enrolled in a course in philosophy and also for a program of lectures on general subjects at the University of Akron. I enjoyed all the doings last June at M.I.T. on Alumni Day. It was grand to see the fellows in our Class again, particularly those who attended for the first time. However, I did miss Henry Sheils and Fanny Freeman very much. In Clive Lacy's Alumni Fund letter of October 1, I was sorry to get the information that Max Woythaler was at the moment laid up recuperating from an operation. I sincerely hope that his trouble is not serious and that he will be up about soon. My plans for 1958 are in the indeterminate stage at the moment. However, I can assure you that I will make a trip to New England next June, and the period of my stay will include Alumni Day. I may find that I have some company in the 1915 'retired' classification."

And here's Hank Marion's letter following the delightful New York class dinner we had last January. Hank, too, has retired; but I hope we'll always have him at those New York dinners. He and Larry Landers teamed up to do a grand job. The list of men, which Hank refers to, that he sends me, gives a detailed check on all our classmates in the Metropolitan area. "I was so sorry to hear that your business associate and old friend has passed away and that you could not be at the 1915 dinner in New York because of the funeral. I am sending you, attached, a list of those who attended, from which you will note that we had 28, 23 from the New York-Philadelphia-Connecticut area and five from Boston. I am also sending you a tabulation which I had made up showing those who attended the New York dinners from 1954 through 1958. This is more or less academic, but is interesting. I am also sending you comments on various people contacted or heard from in the New York area who were not at the dinner.

"As you know, I am hoping to retire the end of March this year and do not expect to be in the New York area next January; therefore I think that you should make arrangements for somebody else in the area to take over the job of trying to get the fellows to the dinner. We had an awfully good time the other night; and as I said before, I am sorry it was impossible for you to be there. I hope you are going to be down in New York sometime before the end of March, so I can see you before I leave. I expect to do considerable traveling, and we will be away quite a bit of the time, although we are keeping our home in Plainfield and will return to it periodically for short times anyway, until we know definitely whether we want to keep it or not. We expect to be down in Florida the latter part of April for a while, and from then on, we do not know."

Maurice Brandt sets an example for any other generous souls who'd like to contribute a little for our famous "help" slogan. Thanks a lot, Maurice, for the check and your good letter. At our age, I just don't know what he means by "misbehaving"; younger, I could hazard a few guesses. Time marches on! "Are you behaving yourself? I have not been – in fact I haven't written you for years and haven't sent in any 'Help Azel' contributions for said many years. My intentions were good, but intentions really don't mean much in this world of ours – the year started O.K. as you can see by the date on the enclosed check, which was the intention. In not mailing it at the time I was misbehaving very badly. This will acknowledge receipt (regularly) of your many interesting letters with all the class news. A lovely mild winter *here* – even though it was the worst in 40 years 'tis said – and I just couldn't find an excuse to get up to the class feed in the Big City late in January (with the weather the way it was up there). Once in a while I see Ed Proctor, the only other '15 man in this part of the state, and have started to work him up to attending our 1960 reunion. It's always inspiring to get another of our really brilliantly successful classmates at reunions. Everything is well with me – keep up those fine notes."

More honors to 1915: congratulations

to Bob Welles on his election to the presidency of the M.I.T. Club of Southern California, which Ray Stringfield tells us about. Just think of a Californian admitting that their weather has not been colossal or super something. "I'm afraid no one else has told you, and I'm slow in doing so, but you should know that our Bob Welles was elected president of the M.I.T. Club of Southern California for the current year. The Club has been putting on a series of programs on the International Geophysical Year which have been very interesting. Bill Mellema and his wife, Pearl, sat with Lucile and me at the last meeting, and we had a good visit. Bill has been architect and structural engineer for many schools and other buildings in this area. Bob Welles and I have been on a committee headed by Bill Stewart'23 which is trying to raise a few hundred thousand from local industry to help out faculty salaries; we attended a dinner a few nights ago with practically all the top brass of the aircraft and electronics industry to hear President Killian, who flew out from Washington, and Guy Stever, who told us some of the facts of life.

"All these fellows retiring make me itchy. I'm sort of semiretired as far as the plant is concerned, as my son, Bob, is carrying most of the load; but they keep throwing consulting work at me on rubber and plastic patent and accident cases, so there's no rest for the wicked. Was in court for 16 days recently as technical expert in a North American Aviation patent suit, and just settled another case out of court which involved a tire blowout. Glad I'm not an attorney. Why talk about Florida all the time? We've had twice as much rain this winter as we usually have, and now it's getting hot already and the smog is grand, but we like it."

It's a little late in the season, but still a good time to acknowledge the many attractive Christmas cards we received from classmates all over the country. The personal messages written on most of them warmed our hearts with cordial feelings for you fine old college friends. Long may you wave!

Again we have to recall sad losses. Marcus M. Anderson died on April 9 in Knoxville, Tenn. Dr. John Duff died April 20 in La Jolla, Calif. Until his retirement in 1953 when he moved to La Jolla, John was associated in New York with numerous hospitals, both public and private. He was a clinical professor of urology at New York Medical College, Flower and Fifth Avenue Hospitals, and a professor at the New York Polyclinic Medical School and Hospital. The son of a doctor, he was born in Boston and educated at the Boston Latin School and M.I.T. He received his medical degree from Tufts College in 1916. The following year he was commissioned in the Navy and graduated from the Navy Medical School in 1921. He served in the Navy until 1925 and for the next three years was the personnel medical director for the Metropolitan Life Insurance Company. In 1929 he opened an office for the private practice of medicine and surgery at 2 East 54th Street, New York, later moving to 745 Fifth Avenue. John, who had a lifelong interest in indigent patients, was the director of surgery for Morrisania City Hospital in New York from 1940 until his retirement, and was a visiting urologist at St. Clare's Hospital there. He was a fellow of the American College of Surgeons and a diplomate of the American Board of Urology. He leaves his wife, Elizabeth; a son, John Jr. of Milwaukee; a daughter, Mrs. Patrick Deeney of London; a brother; and a sister. Our Class sympathies go to these bereaved families. With my best wishes to you all for a happy and enjoyable summer and the hope to see any of you who get to Boston, let us now "help" close the column for this year. — AZEL W. MACK, *Secretary,* Apartment 26A, 100 Memorial Drive, Cambridge 42, Mass.

1916

Our good president, Ralph Fletcher, recently returned from a brief trip to Europe which took him to Switzerland and to Italy. He mentioned that on the evening of his arrival in Rome he and his wife, Sibyl, had a delightful dinner and evening with Joe and Mary Barker. Ralph said that Rome is a "Stone Man's Paradise," with all of the magnificent churches and buildings made of stone many, many years ago and still remaining beautifully impressive. While in Switzerland, Ralph managed to take a little time out to get in some excellent skiing, without mishap.

Since this is the final issue of the current season, Ralph wanted to record his appreciation and commendation "to the 1916 50 Year Class Gift Committee — Joe Barker, Bill Barrett (Class Agent), Steve Brophy, Harold Dodge, and Jim Evans — for the fine progress they have made on a difficult project; to the live-wire group from New York for their fine program of luncheons each month throughout the past year and their successful dinner on May 27; to our hard-working and successful secretary, Harold Dodge, for another fine year with the column and to the many classmates who responded with news for the column; to the many who attended the February dinner in Boston, the Class Cocktail Party on Alumni Day at M.I.T., and the interim 42d reunion at the Chatham Bars Inn on the Cape." He says further: "All of these activities give overwhelming testimony and support to the boast that we have been making for 42 years — that the Class of 1916 is the best class ever to come out of the Institute."

As for the 42d reunion, we'll have a full report in the first issue of the column next fall. Writing here now, a month before the reunion, we can record receipt of a number of reasons why a number of '16 men weren't going to be able to attend. Willard Brown wrote he'd be unable to make it — he was just back from a quick business trip to Switzerland and had ahead of him an extended trip to the West Coast. Victor Dunbar would be at Dartmouth for his 45th. Ed Williams noted that he was still forced to take things easy and avoid excitement but hoped the boys would have a grand reunion. Saul Hoffman had a conflict — a convention at that particular time. Jack Hickey would be in Washington, where one of his daughters was graduating from college. Pete Mahlman was leaving on the 12th to drive his 80-year-young sister up to the old home in Maine to see their 67-year-old sister. Hal Neilson, whom we'd like to see and hear again with some of his deep-South stories, would be unable to come but was planning on the 45th reunion at the latest. George Allen was to be on "safari": New York, May 29 to June 3; Chicago, June 3 to June 9; and Los Angeles, June 10 to June 15. George Maverick would be on his way to Mexico.

Francis Stern, in a note to Joe Barker (a copy of which we got hold of somehow) explained his forced absence thus: "My wife's brother, of whom I am very, very fond, lost his wife a year ago last November. He has just remarried and is off on a trip to Europe. We are having a welcome home party for them; and the only Saturday which was available is the 14th, and I've got to be around. So, although I have looked forward to it and have asked for literature and everything else, I find that it is going to be impossible to get there. If at the last moment we can get an early start Monday morning, the 16th, we may both, Mrs. Stern and I, or I alone, come to Boston for Alumni Day. Another complication is the fact that the 50th anniversary of the National Association of Electrical Distributors takes place in San Francisco ending June 12; and I am supposed to go, having been on the board for many years and serving my last term expiring at the meeting. This would bring me back east on June 13, so you see it's going to be a busy few days for me."

Our letter to Rif (H. Rafael) Lake in California asking for news was forwarded to him in Italy, and early in April we had a nice response from Elizabeth, his wife. She said in part: "Rif has not been too active recently; however, there is no chance of keeping him at home. So we were in Europe in 1951 and again in 1954-55, when we spent four months in Copenhagen. We left Fresno last December so as to have an audience with His Holiness in Rome. We achieved our goal after a trip through the Panama Canal, Curacao, Marseilles, and Genoa via cargo ship, and finally drove to Rome, where we had magnificent weather and a three-week stay. After Rome, Florence; and since February we have remained in Portofino, Italy — a gem of a spot. In California we have two daughters. One, Joan Lake, lives in San Francisco. And the other, Patricia (Mrs. Maris) Atkisson, lives in Fresno with her husband and our three grandchildren: Holly, aged 16; Christopher, aged 14; and Mark, aged 11. Rif as an architect is particularly proud of his Roosevelt High School Auditorium, completed in 1952-53; and it is a high light in the community." She indicated that they expected to sail for home early in May and would be at the Biltmore in New York late in the month. Immediately the committee invited them to attend our May 27 dinner meeting in the Biltmore, which featured Herb and Vi Mendelson's safari stories and pictures. But we had a second letter saying that Rif had to go to the hospital in Rapallo for treatment and that the sailing date was put off to June

10. Our best wishes to Rif for a speedy recovery!

Here's a further bit of information regarding the Collier Trophy awarded to Charlie McCarthy and his associates, as reported in the May issue: They were responsible for the conception, design, and development of the first operational carrier-based fighter capable of speeds exceeding 1,000 miles per hour — the Chance Vought F8U Crusader, a Navy jet fighter plane. The jet fighter, which can land on a section of carrier deck *shorter than a football field*, flew at 1,015 miles per hour in an official test, going from Los Angeles to New York in 3 hours and 23 minutes. Nice going, Charlie!

After we wrote up the story for March about Barney Gordon and knitwear and automation, we had further news clippings from up Boston way, one of which bore the headline: "New Type of Sweater Yarn is Pill-Proof." There's a picture, too, which includes Barney himself — this is the caption: "Emilio Pucci, Italian sportswear designer, receives good wishes from H. D. Hodgkinson, president of Filene's, and Barnett D. Gordon, president of Darlene Sportswear."

Also in the May issue, a good story from Vert Young included a bit about hunting in Alaska and another trip he and his wife expect to take in August, this time for mountain sheep and possibly a grizzly. Here's some more of his story, not included in the May issue because of space limitations: "Another bit of fun was a week's flying trip over Newfoundland and Labrador last June. The sea northeast of Newfoundland was full of arctic slab ice, and snow and ice covered the higher parts of Labrador. This trip was 'in line of duty' but none the less interesting. One trip was made in a flying boat, and the sense of safety flying over the ice-filled ocean was relieved a bit when we found that the hull leaked like a sieve. We set down at Goose Bay late one night after two hours on the water at Port Hope Simpson. They opened four cocks in the hull; and when I saw the water that poured out, I wondered how we ever got in the air." We'll be waiting for the story about the mountain sheep and *possibly* a grizzly, Vert.

We have another item of considerable interest regarding Bob Wilson. It appeared in a news release dated March 19, his last day as chairman and chief executive officer of Standard Oil Company (Indiana). "Standard Oil Foundation, Inc. (Indiana), tonight made a $75,000 unrestricted gift to the College of Wooster, Wooster, Ohio, as a testimonial to Dr. Robert E. Wilson, Wooster graduate and chairman of the college board of trustees. Frank O. Prior, president of the Standard Oil Foundation, announced the Foundation gift at a dinner given by the company's board of directors in honor of Dr. Wilson. Mr. Prior, who succeeds Dr. Wilson as S. O. Co. (Ind.) chairman of the board and chief executive officer, paid tribute to him as a pioneer leader in corporate support of education. He said the retiring chairman plans to continue his interests in education with the additional time which retirement permits. Standard Oil Foundation, Inc., was organized in 1952 as a means of aiding worthy causes in the areas of public welfare, health and medicine, youth activities, and education. Under Dr. Wilson's chairmanship, Mr. Prior reported, the Foundation has made $800,000 of unrestricted gifts for education to state associations of private colleges in 14 Midwest states through 1957. In addition, it makes grants for fellowships, scholarships, and contributions for other basic educational programs and research. It also finances a number of National Merit Scholarship corporation scholarships for high school seniors who are children of employes of S. O. Co. (Ind.), which provides the funds that support the Standard Oil Foundation."

As of May, Hovey Freeman was feeling much better and back at the office daily. Said as long as he sat, which he was not accustomed to doing, he seemed to get by O.K. He and his good wife had two weeks in Nassau to visit two of their children who live there. But most exciting of all was their witnessing their younger son and wife and crew as they came sailing into the harbor to complete 12 months of sailing around the world from Hong Kong, where his son had arranged to have their ship, the *Mah Jong*, a 52-foot yawl, built. They had been 37 days on the way from the Canary Islands, due to head winds and high seas. Hovey says all were well, the ship is a beauty, and needless to say Mom and Pop are delighted to have them back in this country. He says to watch for an article in the December issue of the *National Geographic Magazine* for an interesting account of their visit to the Aegean Islands.

Saying the 1916 column certainly deserves to be supported, Doug Robertson gives us this interesting account: "About a year ago my son finished four years in the Air Force and rejoined me in my business, Mount Hope Machinery Co. We have recently placed an electronic weft straightener on the market, and it is his job to supervise its installation in textile finishing plants and to see that it is maintained properly. We have a plane which he flies to cover his work and which I fly whenever I get a chance. Last summer I flew out to Saint Louis by way of our southern branch at Charlotte, N. C. John's last year in the Air Force was spent with his wife and son in England, where we visited him in a house built about 1600. Our grandson, three years of age, is our pride and joy; and we are looking forward to having a sister for him to play with in July. Last February my wife and I visited friends in Florida on the way to Nassau, where we stayed at the Country Club. It was too cold to swim, so I got in some golf. The next week it turned warm and we had a chance to enjoy the beach and do some fishing. Also tried out an aqua lung, which I thought was a wonderful sensation but was too hard on my ears. I have since learned that face plates are available that enclose the ears. I hope to try one out at Mattapoisett this summer. We have had a cottage there since 1935 and are looking forward to getting down to it in June."

Herb Gilkey has come in for another honor, as announced a short time ago in the Journal of the American Concrete Institute. He is the recipient of the Henry C. Turner Award "for notable leadership in advancing the knowledge of properties of plain and reinforced concrete." As the Journal states it: "This award, established by the late Mr. Turner, A.C.I. Past President, is presented for notable achievement in, or service to, the concrete industry. The medal is of gold and is accompanied by an engraved certificate that recounts the medal's purpose. Eminent in the field of research in engineering materials, especially concrete, Professor Gilkey has written several textbooks and manuals, as well as some 150 papers and discussions, dealing with concrete engineering, materials, and testing methods. . . . Culminating some 25 years of continuous activity on both technical and administrative committees, Professor Gilkey was elected president of the Institute in 1949. . . . Educated at Oregon State College, M.I.T., Harvard, and the University of Illinois, he began his teaching and research at the University of Illinois in 1921. Continuing his work at the University of Colorado from 1923 to 1931, he then became head of the Theoretical and Applied Mechanics Department at Iowa State College, from which post he recently retired."

We asked Herb if he would make a comment or two on this significant event, and we are glad to report his reply: "To be the 14th recipient of the Turner Gold Medal (the top recognition in concrete) is bound to be a pleasant experience comparable to the American Society for Testing Materials honorary membership — an equally mystifying and undeserved windfall the why of which I still fail to grasp. Certainly my own 'concrete' hat is several sizes smaller than the hats of my Turner Medallist predecessors. My 'concrete' head may be that *hard* but it isn't that *large*, and I would indeed have to be a gullible egotist to convince myself otherwise. But it is nice to have one's colleagues think those kind of things about you even when you know inwardly that 'they just ain't so.' The 1916 notes are always enjoyed, and I continue to hope wishfully that at some not-too-distant a year our presence at a class reunion may materialize. As of now that year is evidently not 1958." Our heartiest congratulations to Herb for the new honor!

The March, 1958, issue of a little magazine called *Research Radiations* came across our desk quite recently, and on the cover was a good-looking guy, about the age of an average 1916 man or even younger, looking in a test tube — no, two test tubes; and the title of the picture was Russell E. Lowe. It was Russ all right, and we're proud to quote what it said about "This Month's Cover": "Russell E. Lowe, formerly director of Specialties, Cities Service Oil Company Specialities Division, is shown comparing a normal oil with a specially developed non-congealing oil at a temperature of 40 degrees below zero. This oil, developed for Sperry Instrument Company, was used as a gyroscope lubricant. This is only one of the 65 patents filed during Russ's 34 years with Cities. Russ joined Cities Service as an electrochemist in 1924 and in 1926 became assistant director of research, the Doherty Research Company. Throughout his long years of service he held various other positions in the Cities Service Re-

search organization, including founder and former editor of *Research Radiations.* Sometime on a clear, cool day in the future, we will have reason to envy Russ in his retirement; for you can be sure that this 'Compleat Angler' will be casting in some secluded stream." Russ says that while plans for the future are still indefinite, it seems probable that they'll end up somewhere in Florida.

When Tom Holden speaks out, one listens, as any reader of the *Wall Street Journal* knows. Here's a clipping from this source at the end of April: "Construction contracts let in March fell 12 per cent below a year ago, with all major categories showing declines. March awards brought total first quarter contracts to $6.7 billion, off 11 per cent from the like 1957 period, according to F. W. Dodge Corp. Thomas S. Holden, Dodge chairman, said there are indications of a pickup in highway and housing construction and 'I will be surprised if there is no upward trend in total awards in April and May.'"

We regret to report the passing of the following classmates: Kenneth F. Hawley in Baltimore; J. K. Weidig in Toledo in August, 1957; Hollis G. Young in Fillmore, N. Y., of a heart attack in September, 1957; and Lawrence F. Edgerton in Ludlow, Vt., on January 14, 1958. Letters of sympathy have been sent to survivors by our President. At the May class luncheon in New York we had the pleasure of including Aime Cousineau of Montreal, who was staying at the Biltmore for a short time. Before retiring, Aime was the head of the Planning Department of the city of Montreal. He advises none of us retirees just to sit around, keeps an office in downtown Montreal for consulting services, and certainly gives the impression that he has found the right method for retired engineers to keep their youthful spirit and looks.

Finally, a note of appreciation to all who have written in this past year to help keep the column full. If you are not listed as a contributor of a paragraph since the November issue, consider yourself due and send something now to help start the fall season collection of news bits. And now, from all your officers, best wishes for the kind of summer and vacation you've been looking forward to. — HAROLD F. DODGE, *Secretary,* 96 Briarcliff Road, Mountain Lakes, N. J.

1917

Alumni Day 1958 will be a matter of history when you read these notes. Many of you will be either on vacation or looking forward to the same, except those who have retired and are enjoying a continuous vacation. To those who will retire in 1958, we would suggest that you write us before next September about your plans so that the next issue of class notes in November may keep your classmates up to date on your activities.

Dick Lyons had a letter from Walter F. Pond — a consulting geologist with home base at Malvern, Ark. — which is quoted herewith: "I returned to Malvern last November after four months' consulting work in the Southwest and in California, Wyoming, and way stations. I was fortunate enough to spend the hottest months in the mountains of California, in the region of the Mother Lode, though not in the search for gold. I saw the only known Cornish pump in operating condition in California at Nevada City, the Malakoff hydraulic pit (longtime strangled by the California debris law), where they operated at a profit on nine cents per cubic yard gold content. I also saw several old Pelton water wheels — one still in use in a garage machine shop — including old wheels from 60-inch diameter down to one 10-inch, which was in an antique shop, very rusty, but which I have since regretted not buying. We drove down through State Highway 49, which traverses the Mother Lode most of the way. I took time off to go to Lassen Park, but the mountain refused to belch lava for me; then on to Crater Lake, Oregon, but the weather was hazy; and down the California Coast Highway, the scenery from which is gorgeous. In September we had cooler weather and journeyed to Barstow, an old stamping ground of mine, near the old Calico silver district which Knott is rehabilitating from its ghost town status to a tourist trap. The Mojave Desert is much as ever, though reports this winter are that much rain has caused the desert wildflowers to bloom as never before. Then we went up Owen's Valley, past the old mining towns of Randsburg, Johannesburg, and Red Mountain, taking in the new borax developments at Boron, near Mojave. We moved on to Bishop and through my old fields in Nevada and Utah to Wyoming, and then home again. Since returning home in November, I have been vegetating and settling down into a house we purchased just before taking off for the summer. I don't expect to go into the field again for another month or so, although some new commission might turn up."

We have received notice of the death of two of our classmates: Samuel Daniels and Lyman C. Hibbard. Samuel Daniels died on July 14, 1957. He was a graduate of Course III. Our last advice was that he was president of the Harry C. Jacobs Company of Dayton, Ohio. Lyman Hibbard was an architect who died on October 22, 1956, at his home at Plainfield, N. J.

Turning back again to the class notes of the year 1920 donated by John L. Parsons of Rye, N. H., there appears an interesting paragraph about happenings on the Monday and Tuesday preceding the alumni banquet in Walker Memorial.

"A small crowd of convivials got together Monday night at the Brunswick. Here, after an excellent meal, Dud Bell got up and gave an impromptu talk on the presidential possibilities of the coming election and told us a great deal about Harding. Dud had a very personal contact with Harding, as he was very well acquainted with his chauffeur's wife's sister-in-law, and he gave us some very interesting points in regard to his home life as well as his political aspirations. . . .

"The crowd again got together on Tuesday night at the Grand Banquet in Walker Memorial. Over 40, including Doc Dewey and Andre Deschamps'20, Brussels'17 (University — not carpet), lock stepped into the dining hall to the tune of "Drunk Last Night." Rad Stevens led the noise with the same pep as when he piloted the gang down the sawdust to Billy Sunday." The balance of the class notes of 1920 record engagements and weddings too numerous to mention.

Thursday, May 8, 1958, was the day for the monthly class luncheon at the M.I.T. Club of New York, Hotel Biltmore. Those present were: Bert Morton, Ed Payne, Dick Loengard, Enos Curtin, Dix Proctor, and your Secretary. Dix had just completed a three months' trip around Africa, and needless to say those present kept him busy telling about his experiences and the sights that he and Mrs. Proctor enjoyed. When the American Society for Engineering Education met for its 66th annual meeting on June 16 to 20 of this year at the University of California at Berkeley, Professor Emil A. Gramstorff of Northeastern University presided at a business session on evening engineering education. The theme was "Patterns of Part-Time Evening Engineering Education on the West Coast."

An Arthur D. Little news release of March 10 reads as follows: "Raymond Stevens, president of Arthur D. Little, Inc., has assumed the duties of chief executive officer of that industrial research company, it was announced at the March 7 annual meeting. Earl P. Stevenson (M.I.T. '19) continues as chairman of the board." A.D.L. doesn't let any grass grow under its feet; in *Electronic News* of April 7, Ray is shown — in a two-column picture — welcoming Lieutenant General James M. Gavin to the A.D.L. staff following the latter's retirement from the Army.

The March 31 quarterly statement of the Du Pont Company shows an asterisk after the name of Walter J. Beadle, listed both as a member of the executive committee and as an officer of the company. The note at the bottom of the page reads: "Retired April 30, 1958." Apparently Walt remains a member of the board of directors. What gives Walt; a trip around the world in that boat of yours, or more time to go skiing during the winter months?

Toward the end of May one of our agents attended dinners of the M.I.T. Clubs of Virginia and New Hampshire, which feasts were conveniently spaced a week apart, at Richmond and Concord, respectively. Previous to Richmond, his meanderings in the tidewater region of Virginia brought him to a hamlet called Redart, one of the 29 post offices in the county of Mathews. He reports: "Redart's population up to a few years ago consisted of 12 families, but then Dick Whitney moved in to make the proportion of Democrats to Republicans 12 to one. Dick is comfortably domiciled on a delightful plantation on the littoral of Chesapeake Bay, and the hospitality is excellent, just as it is in Richmond at the Dick Catlett homestead." Our agent advises that Redart isn't far from Richmond; and on application to the undersigned Secretaries, full road directions will be furnished.

At the M.I.T. Club dinner in Richmond, Dick Catlett presided "ably, and deservedly won another term as president with Cornelius Coakley and Dick Whitney casting ballots in his favor. A week

later, at Concord, no 1917 man ran for office inasmuch as Jimmie Doon, quondam judge and more recently Doctor of Humane Letters *honoris causa*, was chairman of the nominating committee. Clarence Holt stood ready to support Dr. Doon's slate from the floor, but there was no difficulty. It seems that New Hampshire politics operate like those in Virginia, though the parties are *vice versa*."

As we go to press, a letter comes from Tubby Strout with whom Ed Tuttle not so long ago conferred while on a west coast pilgrimage. Tubby enjoyed this but his letter was brief, and the only other point mentioned was: "I have been working madly in my little garden."

I hope that "you all" enjoy your summer vacations. While you are away just remember: "You may be able to make some people think you are younger than you are, but you can't fool a hamburger just before bedtime." Also note: "Men are born collectors. First they collect bugs, toads, and marbles; then girls, kisses, and ties; then money, worries, and a family; then golf trophies, crude jokes, and hair tonics; and finally pains, symptoms, and memories." — W. I. McNeill, *Secretary*, 14 Hillcrest Avenue, Summit, N. J. Stanley C. Dunning, *Assistant Secretary*, 21 Washington Avenue, Cambridge 40, Mass.

1918

A short communication from Granville Smith suggests that life is something more than a casual train dragged along the tracks of time without the organization of an inscrutable directive. His temporary retirement of 1954 from the Army with the rank of lieutenant colonel and a heart ailment was made permanent last September. On the 18th of June, 1955, he and Dorothy Van Alstyne were married again and decided to make Florida their permanent home. They now reside at 606 Canal Road, Sarasota, where they bought a house about a year ago and had a happy winter despite the unusually cold weather. They expect to drive north for our 40th reunion, an additional reason being to visit two sons and five grandchildren before heading south with the birds about Labor Day. Visiting classmates will be welcomed.

We had hoped to run into Ben Ballantine again at a neighboring meeting of the Couples Club. He lives only a few miles from us with a row of 11 carved elephants, oriental rugs, and two Chinese vases. His father was a medical missionary to India, though Ben has been in the States since he was eight years old. Two other small pieces of peripheral family history are the losing of a sister in the Yokohama earthquake of many years ago (I, too, had a sister very near there), and a brother who married Robert Frost's daughter. Bill Wills has broken into print again, this time as the architect chosen from a group of 15 to design a new church to be built in Lynn. Another of his churches is currently being erected in Winchester, where Bill is now a resident. The *Quincy Patriot Ledger* quotes him as saying: "We're particularly suited to do small traditional churches. Other architects have forgotten how . . . or they never learned. The trouble with most architects is they are not artists in any sense of the word. Function is not the most important thing. What we're trying to do is to put a little beauty back." Bill's older boy, Charles, is a building contractor who puts up a lot of the "old man's" houses. Richard, the younger son, works in his Dad's Boston office days and attends Boston's famed Architectural Center evenings. Your Secretary, among other commitments, addressed the Spring Conference of the International Association of Printing House Craftsmen held at Worcester on May 3, and was given a standing ovation, which does not often happen to anyone. See you June 13 at Clauson's Inn, North Falmouth, Mass. — F. Alexander Magoun, *Secretary*, Jaffrey Center, N. H.

1919

A card from Art Page, recently retired from the job of war production superintendent, says: "No pressure now!" His new address is 1516 South 25th Avenue, Hollywood, Fla. He sends his regards to all.

E. E. Saunders (Captain, Civil Engineering Corps, U. S. Navy) writes from Washington, D. C., that he expects to retire from his position as Chief of the Plans and Readiness Branch of the Industrial College of the Armed Forces at Fort L. J. McNair early this summer. He and his wife will then spend three months in Europe before deciding where they will make their retirement home.

Does anyone know the current address of Archer G. Smith? ? ? We have new addresses for the following classmates: Dr. Frank C. Hoyt, 2210 Page Mill Road, Palo Alto, Calif. Also note that he has moved on from professor to doctor! Edgar F. Seifert, Mounted Route, Box 476, Chesterton, Ind. William J. Hagan, Jr., Glenview Drive, Lookout Mountain, Chattanooga 9, Tenn. J. Herbert Gould, 395 Blue Hills Avenue, Milton 86, Mass. Be glad to have a card or letter from all of you at your convenience.

Since writing up the news for the June issue we have received further word concerning Ken Davidson, who passed away on March 19 in Paris, where he had recently been chief scientific adviser for Supreme Headquarters, Allied Powers in Europe. Before that for many years he was director of the experimental towing tank at Stevens Institute of Technology in Hoboken, N. J. His work on hydrodynamics made possible the use of small towing tanks and models as research instruments. And this opened a much broader field of research than was previously possible. Ken became ill while lecturing at Istanbul Technical University in Turkey. Hope you all have a fine summer. Write and tell me about it in the fall. — E. R. Smoley, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N. Y.

1920

Your Secretary had an exceedingly pleasant visit with Bill (Mouse) Meissner, who is now living on Valley Forge Drive, Deven, Pa. Mouse is one of that dwindling number of classmates who have changed very little in appearance since undergraduate days. A practicing architect most of his life, he is now associated with American Viscose Co. on special development projects.

Our valued classmate and class representative for the Alumni Fund, Al Burke, was recently hospitalized for a shoulder operation, but is now on the mend. A welcome letter from Don Kimball, who is manager of Paper Manufacture at Eastman Kodak Company, says that he is certainly going to try to make the 40th reunion in 1960. I am happy to pass along word that Don is in excellent health. He and Hank Couch and Ed Farrow have certainly made the Class of 1920 an important factor at Eastman Kodak. Bob Bradley thinks fellows like us ought to retire at 60; but he is certainly serving as the opposite example: besides running his own company, the Precision Products Company in Waltham, he has just taken on a new enterprise, the Solid State Products, Inc., which will engage in research development and manufacture in the field of solid state physics. Bob also supervises his very fine herd of Black Angus cattle at South Dartmouth, Mass.

Hugh Duffill, who is president of Duffill Associates, Inc., a civil engineering firm, has recently been in the local newspapers because of his work on a stream channeling and drainage project for the town of Wellesley, Mass. Harold Bibber recently presided at an Engineering College Administrative Council Conference at the University of California at Berkeley.

Norrie Abbott has passed along some comments from Ed Burdell. Ed says he did not realize that there are 387 survivors of our Class. He goes on to say that most of his friends in the Class have either died or retired. I would like to dispute this; but based on the response I get to my appeals for news, I have to conclude that he is right. Ed himself is certainly going strong. As head of Cooper Union he is directing a seven and one-half million dollar campaign and is about to supervise the erection of a new engineering building on Astor Place on the lower East Side of New York.

To further shame some of you fellows who have been identified with the Class of '20 for four years, I can report on a long and interesting letter just received from Louis Bender, who only spent one year with us at the Institute. Louis had received a B.S. degree in Electrical Engineering at Kansas State College 15 years before he came to the Institute. He was sent to M.I.T. by the Signal Corps, and he became chief of the Engineering and Research Division of the Office of the Chief Signal Officer in Washington. He has also been director of the research laboratories of the Signal Corps at Fort Monmouth, N. J., and of Wright Field, Ohio; and it was under his direction that the first radar equipment of the U. S. Army was developed and constructed. Louis retired before World War II but was called back to active duty at that time. He has also been on the staff of the Westinghouse Radio Division. His rank in the Signal Corps was colonel. He had a son who graduated from M.I.T. in 1947, Course XV. He lives in Manhattan, Kan-

sas, and since his retirement has been doing a lot of traveling, including trips to Europe, Alaska, and the national parks throughout the West.

I regret to report the death of Fred Zurwelle at Miami Beach, Fla., on March 23. Ed Brickett is with the Construction Chemicals, Inc., Saint Paul, Minn. Forest Sanders is in El Paso, Texas. Herb Federhen has moved from Newton Highlands, Mass., to Kingston, N. H. Jack Coyle's present address is Hill Brook Lane, Fairfield, Conn.

Dorothea Brownell Rathbone writes that she is thankful to say that she has no new news, but she sent me a clipping from the Yale alumni magazine that she said she thought I would appreciate. She was right. It was a quotation from *Lucretius* Book I, and comprised the entire Class Notes from one of the Yale class secretaries, who I feel is a kindred spirit. The quotation is "Nothing can be created out of nothing." — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

The fourth and last official gathering of the 1957-58 season for the Class of 1921 took place on campus in Cambridge last June 16, closing a round of additional meetings and special activities which you requested of your class officers at the 1956 reunion. This last year got under way with several meetings of the 1921 group at the two-day Alumni and Class Officers' Conference at Technology last September. A second opportunity for a get-together was the annual midwinter dinner of the Alumni Association in Cambridge early in February, on which occasion the large 1921 contingent met for cocktails in the Faculty Club prior to the dinner.

The high spot of the year — or any year, for that matter — was our once-in-a-lifetime class reunion in Havana, Cuba, February 21 through 25, as guests of the outstanding M.I.T. Club of Cuba, whose kindly members and their wives saw to it that we had the time of our lives. Lastly, our annual June party in Cambridge saw the members of the Class, their wives and guests, join for luncheon in Du Pont Court, for cocktails on the green of Briggs Field, and at dinner in Rockwell Cage. For the full account of these doings and who was there, be sure to get the November issue of The Review through a renewal of your Amity Fund contribution right now!

Speaking of Cuba — both Class Prexy Ray St. Laurent and your Secretary have received warm letters from Gonzalo C. Docal'44 of Havana, who was named president of the honorary members of the Class of 1921. In excerpts from these letters, he says: "I have wanted to let you know how happy we of the M.I.T. Club of Cuba were to have you all with us. Moreover, I want to tell you how deeply honored I feel with the distinction of representing your Class as president of the honorary members of the Class of 1921. I guess I was lucky to come into the world at the right time! Please express my appreciation to all who attended the reunion as well as to the rest of your distinguished Class. In Cuba, you will always find someone in addition to Helier who is proud of being a '21."

Belatedly we report that all three members of the Second Generation of 1921 Club at M.I.T. who were graduated in the Class of 1957 were on the Dean's List right up to their graduation. This accomplishment is to the credit of Peter C. Card, son of Tom and Mrs. Card of Fairhaven, Mass.; Malcolm M. Jones, son of Mrs. Norma H. Jones of Boston and the late S. Murray Jones; and Thomas L. Whitehouse, son of Mr. and Mrs. Irving Whitehouse of Cleveland, Ohio. Irv is a member of the prominent Class of 1922 and Mrs. Whitehouse is the former Helen Lord of our Class. Mal Jones was signally honored at graduation and also won the Balfour Province Award of Sigma Chi as the outstanding undergraduate in 1957. A welcome note from Norma Jones says she will again attend the class luncheon on June 16 and also advises that son Malcolm is now a research assistant in the International Business Machine Computation Center at the Institute, where he is working for his master's degree in economics and engineering. We have a good phonograph recording by the M.I.T. "Logarythms," of which Mal is a member. This group recently sang at Tech Night at the Boston Pops, Mal included, of course.

James R. Cudworth, Dean of the School of Engineering of the University of Alabama, took a prominent part in the annual meeting of the American Society for Engineering Education at the University of California, Berkeley, last month. Jim also presided at a luncheon meeting of an Engineering College Administrative Council Committee. You have the annual class letter from Ray St. Laurent with the resumé of class affairs. Ray has recently been active on the proposal by the Alumni Association to designate all future 40th class reunions as the BIG ones, starting with the Class of 1921 reunion in 1961, in honor and recognition of our having explored and adopted this idea several years ago. We have had several letters and phone calls from Ray, and we can tell you now that our 40th reunion, coming as it does on the 100th anniversary of the founding of M.I.T. in 1961, is already taking the shape of a superb affair which you cannot afford to miss. Plan NOW to be with your old friends in 1961 at the reunion, where we will be the group specially honored by the Institute.

Sumner Hayward was elected president of the M.I.T. Club of Northern New Jersey at the annual dinner meeting which also re-elected Joe Wenick as treasurer. Sumner is the fourth member of the Class to be so honored, following George Chutter, the late Max Burckett, and your Secretary. Joe's selection recognizes the superb job he has done for the last several years. Sumner is engineer of Outside Plant and Transmission of the New York Telephone Company; a past president of the Brooklyn Council of the Telephone Pioneers of America; former vice-president and member of the board of governors of the New Jersey Club; former chairman of the M.I.T. Educational Council for New Jersey and an honorary secretary of the Institute for the Northern New Jersey area.

Ralph G. Barrows is with the Blanchard Machine Company, Cambridge, Mass. Maurice Gerin has a new home address at 7000 Côte de Neiges Road, Montreal, Quebec. Paul L. Hanson is living at 2011 Third Avenue South, Minneapolis 16, Minn. Michael Treschow has moved to the West Coast, where he is associated with General Atomic Corporation in San Diego, Calif. Addresses have also been received for Albert B. Clarkson, Willard A. Fleming, Howard L. Ross, and George E. Shoemaker, Jr. A letter to your Secretaries will bring any address information which is available.

Dr. Walter J. Hamburger, Director of Fabric Research Laboratories, Dedham, Mass., was in Edinburgh, Scotland, in May, where he delivered a paper on "An Index of Blend Irregularity and its Practical Use" to the annual meeting of the Textile Institute. He was honored by election as a vice-president of the organization, the first American ever to become an officer. Walt was an original member of the U. S. panel of the Textile Institute, the first to be established outside of the United Kingdom. Twice before, in 1949 and in 1953, he has delivered papers at the annual meeting, again the first American to be invited to do so.

It is with heavy heart that we record the passing of three members of the Class of 1921 and extend sincere sympathy to their families on behalf of the Class:

Malcolm Page Canterbury died in Washington, D. C., on March 29, 1958. Born in East Weymouth, Mass., on April 10, 1897, he prepared for Technology at Mount Hermon School and was graduated with us in Course I. At the Institute, he was a member of the Civil Engineering Society and served as a private in the Students Army Training Corps at M.I.T. during World War I. He had been associated with a number of construction companies as a civil engineer and was most recently Superintendent of Construction for the Veterans Administration in Washington. He is survived by a brother, Nathan, of Houston, Texas, and a sister, Miss Edith R. Canterbury of West Roxbury, Mass.

Bruce Mortrom Mills, for 37 years an engineer with General Electric Company, died at his home in Schenectady, N. Y., on April 1, 1958, just a month short of his retirement. Born in Rutland, Vt., on March 8, 1898, he prepared for the Institute at Rutland High School and was graduated with us in Course VI. At Technology, he was active in the Radio Society, the Electrical Engineering Society, the Rifle Club, and as a member of the Indoor Rifle Team. Following our graduation, he joined General Electric, where he contributed many novel ideas in the fields of electrification of dredges, chemical plants, mine hoists, power excavators, and all branches of the oil industry. He was an authority on explosion proof equipment and the use of electricity in oil refineries. He was a member of the General Electric Engineers Association, the Quarter Century Club, the American Petroleum Institute, the Elfun Society, the National Rifle Association, the M.I.T. Club of Schenectady, and the Escape

Club. He was a licensed New York State Professional Engineer. He had a number of patents and was awarded the company's Gold Key in 1950. Bruce is survived by his wife, Mrs. Irene Weber Mills; a son, Dr. Bruce R. Mills; and three grandchildren. We are indebted to Mr. R. B. Moore, Manager of the G. E. Mining, Materials Handling, and Electrolytic Processes Engineering Section, for aid in preparing these notes and for his glowing tribute to Bruce, which will appear in an internal company publication.

Joseph John Schaefer, New York consulting chemist, died on April 11, 1958, at his residence in New York City. A native of Dayton, Ohio, he was born on December 19, 1898, and attended the University of Dayton, where he received the bachelor's degree in chemical engineering. He joined our Class in the junior year and received the master's degree in Course V at Technology in 1921. At the Institute, he was active in the Chemical Society and the Catholic Club. He had been with the Niacet Chemical Corporation, the Wyandotte Chemical Corporation, and was vice-president in charge of development of the Sharples Solvents Corporation before opening his own consulting offices. He was a member of the Chemists Club, the American Chemical Society, and the Canadian Club. Surviving are his wife, Mrs. Mary Kette Schaefer; a daughter, Mrs. Gilles Lamontagne; a son, Joseph J., Jr., M.I.T.'44, of Philadelphia; two brothers and a sister.

This issue brings to a close the current volume of The Review and marks the start of our vacation from the pleasant task of recording your doings until the November issue opens the next series of our monthly class notes. All the class officers and committee chairmen join in wishing you a most pleasant summer and in a sincere invitation to join us here once more next fall via the Amity Fund route, of course. Plan now to attend that memorable 40th reunion in 1961, and watch these columns for news of Class events which will take place before that date. Please write to your Secretaries and bring all of your friends up to date on your news. Happy days to you and yours. — CAROLE A. CLARKE, *Secretary,* Components Division, International Telephone and Telegraph Corporation, 100 Kingsland Road, Clifton, N. J. EDWIN T. STEFFIAN, *Assistant Secretary,* 11 Beacon Street, Boston 8, Mass.

1922

Following April's Trial by Snow we now have July's notes being written in Buffalo's usual sunny spring weather. As vice-president of our Chamber of Commerce, it is easy to report this weather and that of our beautiful cool summer and colorful fall. Actually, the greatly exaggerated snowstorms of this area only appear every three or four years, so don't let them stop you from calling your Secretary when you come by.

Two most interesting reports from C. George Dandrow follow: "The following '22 men and their ladies joined in the annual Longwood Gardens festivities staged by the Philadelphia M.I.T. Club. Parke D. Appel, Donald F. Carpenter, C. George Dandrow, Crawford H. Greenewalt, Theodore T. Miller, Vesper A. Schlenker, Lewis P. Tabor, Charles H. Whittum. The Don Carpenters were hosts at their lovely home for the honored guests and for preprandial operations; the Dandrows were very happy to participate. A Longwood Gardens visitation with the full display of the fabulous fountains would well be worth the long trip. Added to this, the large dinner group, spearheaded by Sam McCauley'41, President of the Philadelphia Club, and his officers, developed a high level of good-fellowship and enthusiasm to greet the speakers of the evening, Dr. James R. Killian, Jr.,'26 and the Honorable Clarence D. Howe'07, former Minister of Trade and Commerce from Canada. Of special interest to the '22 men was Sam McCauley's introduction of the head table, which brought Crawford Greenewalt to his feet following the interesting whimsical comment that he was "a life member of the M.I.T. Corporation and engaged in a local enterprise." We highly recommend this outstanding affair to all of our classmates.

"Our Class was represented at the 10th annual Fiesta of the M.I.T. Club of Mexico, held in March at Mexico City, by Fay Lincoln and George Dandrow and their wives. Some 40-odd Alumni and their wives from all over the States and Canada attended — the groups spearheaded by the perennial V.P., H. B. Lobdell'17, and his lovely wife, Conchita, along with our former alumni president, Hugh Ferguson'23, and his wife. The program was headed by C. M. Cornish'24, President of the Mexico Club, and the arrangements included several very pleasant group meetings providing the visitors with the opportunity to meet and enjoy many of our distinguished Alumni active in our neighboring country. Following the traditional pattern, the 10th annual Fiesta came to a close just before dawn, after several happy hours enjoyed by some 175 guests in the beautiful gardens at the home of Nish'24 and Luisa Cornish. The stars, the beautiful night, the delightful garden augmented by lighting effects and decorations carrying the M.I.T. theme — with dozens of the guests in authentic native costumes from the various states of Mexico, roving musicians and a dozen native cooks and mixers serving the wide range of the delights of their country — made all of those present start thinking about the 11th annual Fiesta! We can highly recommend this as a fine experience."

Announcement has been made by Dr. William C. White, Provost, Northeastern University, of promotion of Richard M. Rush to associate professor of physics. Dick has been on the faculty since 1953, is married, and has four grown children, Marjorie (Drake), David, Frances (Rice), and Richard Jr. Thank you, Clate Grover, for the Whitehead Metal Products push-pull pen for use "when you need a line." Also thanks to Warren Ferguson for the clipping from the *Boston Sunday Herald* telling of Dr. John W. Strieder of Brookline, Chief of Thoracic Surgery at Boston City Hospital. He is a founder of the American Board of Surgery and is currently the only New England representative on it. Bryant Essick, President of Essick Manufacturing Company, has been elected to the board of trustees of Occidental College as announced by President Arthur G. Coons. He was also named to the board committees on faculty and studies and ways and means. Dr. Conrad E. Ronneberg has been advanced to the rank of senior professor at Denison University, a distinction held by only nine other professors there.

Yard Chittick has forwarded news of Earl H. Eacker. Buck was elected vice-president of the Boston Y.M.C.A. at the annual dinner meeting of the organization's general assembly at the Hotel Somerset. Christian W. Bertelsen of Dedham has been appointed manager of Bethlehem Steel Company's East Boston Repair Yard by Samuel Wakeman, General Manager of the Boston district of the Company's Shipbuilding Division.

Parke Appel, in addition to reporting the meeting at Longwood Gardens and the reception at Don Carpenter's lovely home at Mendenhall Valley, told of a meeting at the Union Oyster House attended by Fearing Pratt, Fred Dillon, and Yardley Chittick. This was a Tech Luncheon Club with an address by Ray Bisplinghoff, Deputy Head of the Department of Aeronautical Engineering. As an additional item on Fred Blackall, he was elected in April to the board of directors of the National Shawmut Bank of Boston. He regrets having to miss Alumni Day this year. A most interesting report has been received of three lectures at Columbia University, the first of which stressed "The Individual in the Organization." These were given by Crawford H. Greenewalt, President and Chairman of the Executive Committee of Du Pont, under the auspices of the McKinsey Foundation for Management Research and Columbia's Graduate School of Business. He made the assessment that "E. I. Du Pont de Nemours and Co. has prospered through good times and bad because it is built on principles, not personalities. The proof rests in the fact that an average personnel over its 156-year history has been inspired to above average performance."

We have received the following new addresses: C. Harald Sebenius, 382 East Mariposa Street, Altadena, Calif.; Edward Masterson, 109 North 9th Street, Brooklyn, N. Y.; Platt C. Benedict, P. O. Box 40, Tsumeb, Southwest Africa; James D. Sarros, 100 Whittingham Place, West Orange, N. J.; and Alfred Wolf, Ambassador Hotel, Tulsa 19, Okla. Our sympathy goes to the family of James A. Stalbird of New York State Department of Health, Albany, N. Y., who passed away March 2, 1958. —WHITWORTH FERGUSON, *Secretary,* 333 Ellicott Street, Buffalo, N. Y. C. GEORGE DANDROW, *Assistant Secretary,* Johns-Manville Corporation. 22 East 40th Street, New York 16, N. Y.

1923

These notes were prepared before our 35th reunion and Alumni Day for 1958 became an historic record. If circumstances prevented you from being at The Pines on Cape Cod last month, you can soon "read all about it" in the brochure

which the post-report committee is now putting together. If you were one of the wonderful group who managed "to make it," you know what a pleasant and happy renewal of friendships we all enjoyed.

European visitors this summer will include Jack Zimmerman, Hugh Ferguson, and Bill Stewart. Each sent best wishes to all for a wonderful 35th reunion. To you, Jack, Hugh, and Bill, a sincere *bon voyage* and pleasant holidays on the Continent.

Larry Tracy wrote in late March that he probably could not be at the reunion as "I have recently made a change in business and I am now promoting a new venture which is taking all of my waking time and not leaving very much time for sleep." Our wishes for all kinds of success are with you, Larry.

Unofficially, at this writing, we understand that Ed Schmitz has recently started a consultation business of his own. Perhaps the next issue of notes can provide more details. At any rate, Ed, we wish you also the best of luck.

Registration blanks came in from Louis A. Metz, IX-B, and from Richard D. Ferguson, II, with regrets that they could not get to Cape Cod. We are sorry, fellows, but surely would have liked some up-to-date information to pass along to the Class. Why not drop the new secretary a letter – he would be really pleased to hear from you.

Princeton University has recently honored Daniel C. Sayre, who died two years ago. His name has been given to the aeronautical sciences headquarters building at Princeton's James Forrestal Research Center. The building has been named Sayre Hall. A plaque memorializing Professor Sayre, placed in the main entrance, recalls his achievement as first chairman of the Department of Aeronautical Engineering and his guidance in the establishment of the Center.

Dr. Julius A. Stratton, VI, Acting President of M.I.T., has been named as a member of the 11-man Navy Advisory Board on Scientific Education. The Board will advise on matters pertaining to a special four year college education program in a field of science for 500 Navy men annually. It will also advise on the Navy's effort to revise its education programs to prepare men to fill the Navy's engineering and scientific needs.

The *Asian Student* reports that Chao-Lun Tseng, X, was among eight top science professors who have been branded as "Rightists" and expelled from Communist China's Science Development Commission. He was a doctor of chemistry and at one time attached to the National University of Peking at Peiping, China. At this distance we cannot appraise the significance of this report, but somehow it does not sound good.

To you all go our sincere thanks for the pleasant and enjoyable contacts through letters and personal meetings during the last five years, our term as secretary. May your summer be relaxing and happy and one to be long remembered. – HOWARD F. RUSSELL, *Secretary,* Improved Risk Mutuals, 15 North Broadway, White Plains, N. Y. WENTWORTH T. HOWLAND, *Assistant Secretary,* 1771 Washington Street, Auburndale 66, Mass.

1924

Well, a bit of variety for this, the last column until fall. Thanks to all of you who remembered that this is supposed to be non-fiction; and if you want to keep it that way, your Secretary needs facts, or at least a few hints, to work on.

From Pret Littlefield: the Class has another fund-raiser besides your Secretary. Seems the American Chemical Society wants to replace its present building in Washington with an eight-story structure and needs some $3 million to do the job. Chairman of the industry-education committee (evidently not to educate industry, but to get money from industry – O.K., and education!) is Charles Allen Thomas. Mr. Thomas will not relinquish his post as Monsanto's president.

From Bill Correale: a picture of three stern-faced gentlemen at the Rio de Janeiro Engineering Club. The one on the left is John D. Fitch, "prominent member of the Brazil Section (Americal Society of Civil Engineers) and first vice-president of Companhia Auxiliar de Empresas Electricas Brasileiras." The occasion: Johnnie had just presented to the club his collection of A.S.C.E. Transactions from 1926 to 1956. The gentleman on the right, looking a bit non-plused, is the club librarian. Probably trying to figure where to park 30 years of Transactions. Also from Bill: another picture of three gentlemen. The one on the right is smiling. He's "Colonel L. B. Feagin, assigned to the Mississippi River Commission." Evidently a tour of the Saint Lawrence River project by the Corps of Engineers. He's probably smiling because it's not his project.

Remember when Johnnie Fitch was a Tech Show chorus boy; Charlie Thomas was the prize vocalist of the musical clubs; and Larry Feagin did a very creditable violin specialty? The entertainment world lost three potential stars.

Of course the men who know best what's happening to your classmates are the men concerned. This way it comes straight. Instead of guessing that Hank Simonds is heading east or west or sitting it out in California, you can be told at first hand that on April 28 he was in Napoli; on May 6, in Izmir, Turkey, "continuing on eastward." There's another note which says, "N.A.T.O. has quite anestablishmentthere." He wasn't running out of space, either.

Also straight dope: Carl Muckenhoupt has been promoted to captain in the U. S. Naval Reserve. Your Secretary and Carl started as ensigns together. Your Secretary gave up at the exalted rank of lieutenant (j.g.) with the definite belief that the reserves would never get anywhere in the Navy, when Academy men were having such tough sledding. Carl stuck it out. He stuck out a few more things, too. Dr. Muckenhoupt has been elected to the Council of the American Association for the Advancement of Science, of which he is a fellow. And to complete the record, he has also been elected to Eta Kappa Nu, the electrical honorary society. For some years Carl has been a scientist for the Office of Naval Research. Now he's beginning to reap the honors.

In January we told you that Phil Blanchard had been made a top officer of "something called 'Wyatt Incorporated'" in New Haven. Now Phil clears up the "something." Wyatt, Inc., is the largest independent fuel dealer, except one, in New England. Phil's brother Carl (M.I.T. '18) is president; and another brother, G. K., is a University of Massachusetts black sheep. Phil thinks your Secretary's comparison of his membership in the New Hampshire Union League with that in Philadelphia might be embarrassing to the latter. The New Hampshire outfit is full of Democrats!

Nate Schooler has recently received a high honor. The National Conference of Christians and Jews of Queens County held a big meeting on May 28 at which three awards were given "in appreciation of distinguished leadership in the promotion of Brotherhood." One of the three recipients: Nathan Schooler.

Nate's son Jerry, by the way, is taking a bit of time off from his job as V.P. of Flush Metal Partitions. This summer he's coming back to the Institute to complete his work for the bachelor's degree that he gave up to enter the Air Force.

For some time Frederick E. Terman has held the dual posts of provost and dean of engineering at Stamford. Now he's relinquishing the latter post, will concentrate on his administrative duties. In a "Special To Editor," Alcoa's Public Relations Department announces that Boynton J. Fletcher has been elected vice-president and general manager of engineering for Aluminum Company of America. These P. R. boys don't miss a trick. Curly, by the way, still has the hair that gave him his youthful nickname.

Couple of your classmates performed at the June meeting of the American Society for Engineering Education in California. Harold L. Hazen, M.I.T.'s Dean of the Graduate School, reported on the Development of Engineering Faculties. Dean Anatole R. Gruehr, (Brooklyn Polytechnic Institute) presided at a luncheon and a business session on Engineering Economy. Since 1950 Peter C. Dirksen has been general manager of the New Bedford (Mass.) Gas and Edison Light Company. Now he has been made vice-president and general manager. Ever wonder what a big man in a small city does with his spare time? V. P. Dirksen is also: member, executive committee, Greater New Bedford Industrial Foundation and chairman of its public relations committee; member, board of directors, Merchants National Bank; chairman, advisory board, Salvation Army of New Bedford; member, steering committee, New Bedford Boys Club building fund; incorporator, New Bedford Institution for Savings; well, there's lots more, but that gives you an idea. Probably Peter has little time to sit around with the boys at the Jolly Whaler.

Another new utility V. P. is Frank Manley. This is the Orange and Rockland Utilities, Inc., of Nyack, N. Y., the same company Frank has been with since graduation. One novel entry in his line-up of community jobs is chairing a committee to establish a college, the Rockland County Community College. Who knows, maybe if he succeeds, we'll have a col-

lege president in the Class yet. We're replete with deans, but no prexies.

The *Worcester* (Mass.) *Independent* recorded last March that Sargent D. Heath had been elected corporation clerk and director and secretary of the subsidiaries of the Washburn Co., hardware and wiregoods manufacturers. The story lists about every committee the company has with members of each one, and the Sargent is on most of them.

This is getting to be an all-utilities column with a last item about the Brockton Taunton (Mass.) Gas Company, Anthony D. Matarese, President. In one of those local industry series in the *Boston Traveler,* Tony was quoted at length and in detail on his company and its operations. Your Secretary got most of it, but one word was a bit beyond him: "President Matarese figures he's got the ideal location, geolographically."

Well, so much for this year. Lots of things we'd like to have told you about. Such as how Max Ilfeld conquers nature in the hills of New Mexico; how Nish Cornish is getting his garden ready for a '24 reunion in Mexico City next February; how Ike Lee is enjoying his new freedom in retirement; how Royce Greatwood got restless and came back from his lemon grove retirement paradise and became one of the country's biggest representatives of Japanese industry. We'd like to tell you what Ted Kenyon's invented lately; why T. Thornton Oxnard went to California; whether or not Hunt Wardwell's bringing his seagoing yacht to reunion next June; and what show Griff Crafts's wife is playing in at the moment. But we can't tell you if we don't know. Good resolution for a long summer: take three minutes to drop a line to: HENRY B. KANE, *Secretary,* Room 1-272, M.I.T., Cambridge 39, Mass.

1925

News reached M.I.T. of Stephen V. Zavoico's death just as we went to press a month ago. It was later learned that he died in his sleep of a heart attack while on a skiing trip in Stowe, Vt. The *Hartford Courant* on Sunday, April 6, 1958, provided some facts regarding his life. At the time of his death, he was president of the Hartford Steel Ball Company, a business which he had purchased in 1954. Stephen was born in St. Petersburg, Russia, October 14, 1900. He attended elementary and secondary schools there and in Paris, France. His father was the elected representative of the Southern Russian Nobility, as well as president of the Russian General Oil Company. His greatgrandfather was among the founders of the cities of Vladivostok and Petropavlovsk, and was governor general of Eastern Siberia and Alaska and commander of the military and naval forces of that territory.

Stephen spent four years fighting with the White Russian Army against the Bolsheviks in the Russian Revolution. He came to this country in 1920, and graduated as an electrochemical engineer from M.I.T. in 1925. Beginning his business career with Bethlehem Steel in Pennsylvania, he was engaged in diesel design and electric furnace operations. He then switched to finance, joining the W.R.K. Taylor brokerage firm in New York City. In 1933, Stephen went to Hartford, where he was employed in the investment department of the Hartford, Conn., Trust Company, now known as the Connecticut Bank and Trust Company. He resided in West Avon at that time and was active in Red Cross activities as well as being chairman of the Civil Defense Council during World War II. He became assistant comptroller of Bowser, Inc., in 1943 and eventually assumed directorship of product research and market development there. In 1950, he became president of the Eagle Lock Company division of the Bowser firm in Terryville. He resigned that position in 1954 in order to purchase the Hartford Steel Ball Co. He leaves a son, Stephen, and two daughters, the misses Natasha and Alexis, all of West Hartford; and a brother, Basil, M.I.T. '24, of Greens Farms, Westport.

It is with deep regret that the death of Dr. George V. Slottman on April 21, 1958, was noted. George was vice-president of Air Reduction Co., Inc. He had made many significant contributions to the technology of carbides, acetylene, and oxygen. In 1955 he won the James Turner Morehead Medal of the International Acetylene Association. He was a native of New York City; and after graduating from the Institute, he received his Ph.D. in 1927 from the University of Berlin, after which he served as a member of the M.I.T. Faculty for three years. His next post was that of chief combustion engineer and iron works manager for the United Steel Companies, Ltd., of Sheffield, England. In 1934 he became manager of the technical sales division of Air Reduction; he became director of research and engineering in 1949, and vice-president three years later. Among the many technical groups with which George held membership were the American Welding and American Rocket Societies, the Industrial Research Institute, and the American Iron and Steel Institute. He is survived by his wife, the former Helen McCahill, and three sisters.

One member of the Class who read Fred Greer's letter and responded almost immediately was Chet Trask. He reminded me how close he had been to Art MacLean, whose death had been announced about a month ago. Chet then told of the rough time he had had as the result of a fall from the second-story roof last October, after which he spent considerable time looking at the ceiling from a hospital bed "while his busted back healed." Although the doctor had recommended an operation, Chet refused and claims to have gotten well on pure cussedness! He indicates that he is now feeling fine again, although much poorer, since he feels it costs more to run a hospital than M.I.T.

Two members of the Class have gotten books off the press within the last few weeks. Sam Caldwell has been working on his for some time, and you should already have read about his book in earlier pages of this issue of The Review.

A letter from Y. H. Ku, now Professor of Electrical Engineering at the University of Pennsylvania, encloses a circular of the Ronald Press Company describing his book entitled *Analysis and Control of Nonlinear Systems.* Dr. Ku was a visiting professor of electrical engineering at M.I.T. from 1950 to 1952, and he notes that his interest in nonlinear analysis started during that period.

Letters from M. Kametani of Tokyo, Japan, indicate that he is going to be in this country in the very near future. His plans are still somewhat uncertain as of the middle of May, but he hopes to visit M.I.T. while he is in America.

Mary Morrison Kennedy of Boston who, as most of you should recall, is architect-decorator for the Sheraton Hotel chain, is quoted in the Phyllis Battelle column of the *New York Journal-American.* The title of the article which quotes Mrs. Kennedy is "Stirring up a Bed-lam." The author speaks regarding the increasing prevalence of twin beds in hotels and motels and complaints which are being made regarding this matter. When Mrs. Kennedy was asked about the situation, she replied: "Twin beds are an absolute necessity in hotels. No one wants double beds any more – except for a very few people who have excessive girth. Like extra big men. They like room to stretch out more than a twin bed allows, and we try to reserve extra wide beds for them." – F. L. FOSTER, *Secretary,* Room 5-105, M.I.T., Cambridge 39, Mass.

1926

This is the last issue of notes until fall, and the clipping services have provided us with a real wealth of clippings. Of course the bulk of the clippings is about Jim Killian and his activities in Washington and elsewhere. Since all of you read the newspapers and weekly news magazines, you are way ahead of me on the information in these clippings. I did have a brief report on Jim yesterday when I met Joe Snyder'44, Vice-president and Treasurer of the Institute, in the restaurant in our office building. In a brief conversation Joe mentioned that he had seen Jim last Saturday, and I asked how he was standing up under the strain. "Wonderful," was the report, which I know all of you will be happy to hear.

The second largest number of clippings is always for Charlie Draper, and there are many this month as usual. I will quote from one which will give you some idea of his activities these days: "Dr. Charles S. Draper, father of the inertial guidance system for navigating missiles and airplanes, will appear on television sets throughout the United States Sunday, but he will be in Sweden at the time. Head of the Department of Aeronautical Engineering and director of the Instrumentation Laboratory at Massachusetts Institute of Technology, Dr. Draper will leave Friday for Stockholm to give two lectures. The first, on Monday, will be before the Royal Swedish Academy of Engineering Sciences on 'Practical Problems of Inertial Guidance.' The second, on Tuesday, before the Royal Institute of Technology, will be on 'Theory of Inertial Guidance.' The television appearance will be by film, made recently during an M.I.T. inertial guidance flight from Bedford Airport to Los Angeles. Eric Sevareid

and a Columbia Broadcasting System camera crew accompanied Dr. Draper on the flight and obtained a filmed interview in which he explained how the Boeing Stratocruiser in which they were passengers was being automatically navigated across country by inertial guidance."

Here's some news about Bill Lowell. Recently, Bill was elected president of the R.L.M. Standards Institute, Inc., having served two years as its Vice-president and many years on the institute's board of trustees. Bill is manager of the commercial engineering and quality control for the Lighting Division of Sylvania Electric Products and has been with Sylvania for 28 years, engaged in virtually all the phases of the lighting industry. Bill still lives in Newburyport as he did when he attended the Institute with us. Here's a real brief one typed on a little piece of paper telling us that Bull Roberts has joined Union Carbide Corporation within the last 12 months and is connected with the Ore Department. Another release from Union Carbide tells us that John Gaines has been appointed associate technical director of its Linde Company Division, having been with Linde since 1933. He will be concerned with Linde's interests in technological developments in process metallurgy, especially of iron and steel.

While I was talking of the Sylvania Lighting Products Company I should have mentioned that Howard Biggs has been promoted to vice-president of engineering. I picked this one up from an article in the *Gloucester Times*. Howard lived in Gloucester when he was going to M.I.T. and still lives in nearby Beverly. He has been with Sylvania ever since graduation and has made an international name for himself in the field of lighting. I was reading a story in the *Reader's Digest* recently and came across his name in connection with a spectacular new development that is coming along in wall panel lighting.

Al Libbey, who has been in the building construction business for years in New Haven as general superintendent for the Dwight Building Company, has recently struck out for himself, starting his own construction business to handle work in the New Haven area. Best of luck, Al, in the new venture. After all of these years, who comes to light but Ed Dingley. He sent in a card to The Review in response to a request for his address and turns up in St. Petersburg, Fla. Ed states that he was with the federal government for 27 years, lastly as chief communications engineer of the National Security Agency; he retired last July. He is now staff engineer for Electronic Communications, Inc., of Saint Petersburg. The last of these releases about new assignments of classmates is one about John Masterman, who has resigned from the York Division of Borg-Warner to accept a position with the consulting firm of V. C. Patterson and Associates of York, Pa. On his first new assignment John and his wife left for Teheran, Iran and Rome, Italy to assist in the design of a proposed meat packing plant in Teheran.

This next one involves a close friend and classmate, but I did have to read it in the newspaper, the Boston newspaper. About a month ago big headlines told of a proposed $10,000,000 sport center in the outskirts of Boston. The proposed project is enormous, including a $9,000,000. stadium, the largest swimming pool in New England, 104 bowling alleys, 102 motel units, 180 office spaces, and a tremendous restaurant. Who was behind it? None other than classmate Pete Doelger. The project is just in the proposal stage, and from reading the newspapers it appears that the thing that would tip the scales would be getting the Red Sox to move out there from Fenway Park. This next one is a letter from Alan Laing, Chairman of the Department of Architecture of the University of Illinois. "Dear George — Your last news note in The Technology Review mentioning Herb Beckwith and Walt Campbell brings to mind a bit of supplementary information which I should have sent to you without prompting. It is that Herb Beckwith will be advanced to fellowship in the American Institute of Architects at the national meeting of that organization in Cleveland in July. Herb and Lawrence Anderson'30 have produced many distinguished buildings; and last year the Middlesex Mutual Building Trust Office in Waltham, Mass., by Anderson, Beckwith and Haible, received one of the six first honor awards of the American Institute of Architects at the centennial meeting of that organization in Washington. Herb has also given freely of his time and energy to the work of the Institute over a number of years, and has served as president of the National Architectural Accrediting Board. The honor which will come to him in July is richly deserved." Your Secretary adds his congratulations and those of the Class to Herb.

This has been an unusual type of class notes for your Secretary to write; so I'll admit that they are not being written at Pigeon Cove, which accounts for the lack of "atmosphere." However, we had accumulated so much information about our classmates that it did seem opportune to bring you up to date on their activities. In addition to what we read in the newspapers, we of course meet classmates in the Boston area quite frequently. The other noontime I just stepped out of our office building and bumped into Malcolm McNeil and had a short friendly chat; and a couple of days later Bill Meehan walked by my table in a restaurant and stopped for a moment. Bill mentioned that he had been spending a lot of time recently on construction of Canadian A. and P. Food Stores, in which there is a tremendous growth. Again, the telephone rang recently and it was Bob Dawes checking up on a new Du Pont product he had recently heard about; and of course the conversation drifted to class activities. Bob has an important activity at the present as president of the Central Massachusetts M.I.T. Club. We also had luncheon recently with Chenery Salmon, our Class Agent, who has recently joined the organization of Coffin and Burr, one of Boston's long established investment houses. Pink had just returned from a pleasant holiday in Bermuda; and now I'll have to admit that I am writing these notes a bit early because we are planning to leave tomorrow for a ten-day visit in Bermuda. I had originally planned to take along the clippings and write the notes there and mail them back, but that didn't seem to make sense; a holiday is a holiday, and why not make it one?

This is the final issue of notes for this season. As we always say in this issue please drop by and say hello if you happen to get near Rockport in your travels this summer. No matter what direction you travel, we wish you a most happy summer season and please do not forget to drop a note to your Secretary about your daughter's wedding, your new job, your old job, your golf game, or whatever suits your fancy. We are always happy to hear from you, and so is the Class. — GEORGE WARREN SMITH, *General Secretary*, c/o E. I. du Pont de Nemours and Co., Inc., 140 Federal Street, Boston, Mass.

1927

Dr. Harold Edgerton and his team at M.I.T. have recently completed another huge, powerful, deep-sea camera, which will take stereoscopic pictures of any depth. This unit will be used by the Woods Hole Oceanographic Institute under the Indian Ocean. This team also has been flashing a huge strobe light, a potential airplane beacon, from the roof of the Dorrance Laboratory. Farthest observation reported was the weather station on the top of Mount Washington 140 miles away.

Lawrence B. Grew, as chairman of the North Haven, Conn., board of education, took an active part in the dedication of the Montowese school, which is one of several new modern schools under his supervision.

Albert T. Both has been appointed as assistant vice-president of operations, Cleveland Mill Division, Chase Brass and Copper Co., which is a subsidiary of Kennecott Copper Corp.

Electronic News reports: "Cohu Electronics, Inc., and Massa Laboratories, Inc., of Boston have reached an agreement whereby Cohu will purchase the Boston electronic firm. Remaining as president of the new Massa division of Cohu is Frank Massa, who formerly headed that firm. Massa, formed in 1945, employs more than 100 in the development and production of underwater sound equipment, sonar devices, and ultrasonic products for the Navy and private industry."

We regret to advise of the death on May 6 of Josiah T. Newcomb. He received his bachelor's degree as well as his master's degree in Course VI-A. He was assistant vice-president of Gibbs and Hill, Inc., and lived in Port Washington, N. Y.

Just as we are going to press the New York papers are recording some encouraging comments from Richard L. Cheney, Executive Director of the Glass Container Manufacturers Institute. At a meeting of the New York Society of Security Analysts, he reported that shipments of glass containers used to package millions of consumer items rose sharply in the first quarter of 1958. — J. S. HARRIS, *Secretary*, Shell Oil Company, 50 West 50th Street, New York 20, N. Y.

1928

In preparing for a reunion there is an unusual lot of correspondence between Cambridge and the scattered classmates. Many of the recent letters are from '28 men who couldn't make the reunion but wrote in their best wishes for those attending. Needless to say, we are delighted to have all these messages and appreciate the thoughtfulness that prompted them.

Ham Bacon, until very recently director of research and development at Lone Star Gas Company, Dallas, Texas, wrote to your Assistant Secretary to say he would be thinking about us during the middle of June and sent his wishes for a successful reunion. Now we learn that Ham has been elevated to the position of vice-president in charge of engineering and research for Lone Star. Congratulations, Ham, and very best wishes for your success!

Herm Swartz received a note from Jim McCarthy. Jim expected to be faced with the need of managing two consulting jobs that would be occupying his attention closely in June. Tony Fleming in Leesville, La., wrote to Herm asking that all classmates stay alive and in good health so that he can meet everyone at the 35th. Again, a note to Herm from Wally Bissell, who sent his regards "particularly to anyone who might remember the 'Bugler' from East Machias during the summer of 1927."

Several classmates sent in letters and notes to Jim Donovan: Tom Wood, who is director of purchases for Corning Glass Works, Corning, N. Y., wrote Jim that he had been accepted for a 13-week session of the Advanced Management Program at Harvard Business School, which he would be attending from the middle of February to the middle of May. Stanley Humphres has become a horseman since moving to the Midwest and is cochairman of the Detroit Horse Show this year. Stan's daughter, Lynne, will be making the full show circuit this year with her hunter.

Geoffrey Baker wrote from Wilomico, Newport P. O., Md., to say that he was running a tobacco farm and also working for a small county newspaper, the *Maryland Independent*. His activities for this year include participation in a county tercentenary celebration and interest in political campaigns. Geoff is also a professional artist; and as a sample of his work, he sent Jim a cartoon he did for the *Maryland Independent*.

From Bill Woods came this letter: "Dear Jim, I am sorry to say we can't make it to our 30th reunion. We will be up east in New York attending the ordination of our oldest son. He will be a Maryknoll Foreign Missionary Priest and has already received his assignment to Guatemala. His ordination at Maryknoll, N. Y., on June 14 comes after a nine-year course. For us parents it is really a very big day, or I should say three-week period because of First Masses, receptions, and departure ceremonies. Please remember us to Ralph Jope and all others who remember us. With best wishes for a successful reunion and a pleasant holiday for all, Bill Woods."

One beloved classmate teased Jim with five consecutive picture post cards dated only a few days apart but from widely scattered points of the southern states. All were numbered but unsigned until the last (from Mexico City). Who? None other than Desmond Shipley, who gets around fast and for free as American Airlines pilot. Des, what were you doing in Mexico City? – GEORGE I. CHATFIELD, *Secretary*, 11 Winfield Avenue, Harrison, N. Y. WALTER J. SMITH, *Assistant Secretary* and *Reunion Chairman*, 209 Waverly Street, Arlington, Mass.

1929

Since this is the last copy of The Review until the fall, I hope to have copious notes for the next issue. I will hope to see many of you at Alumni Day on June 16 and also hear from many of you during the interim months.

As you all know by this time, John Wilson was elected president of the Alumni Association for next year at the Alumni Council meeting of April 28. Our congratulations to John; we are all very proud of him.

John Rich writes me as follows: "First glad to hear . . . haven't for a long time. I hear occasionally from Tom Speller who is at General Riveters, Inc., Hertel Avenue, Buffalo. For myself, am still with Improved Machinery, Inc., here in Nashua (New Hampshire). I went only 40 miles away after leaving M.I.T. Squam Lake in the summer, except this year to Europe in July with the family – I guess with half the rest of the United States, from what I hear. Principal interests: raising a family, business, and playing with a sports car. Enjoyed much seeing Wally Gale the other day."

Also a note from Adam Stricker: "Last fall I moved from Detroit to New York to establish my own management consulting firm, Stricker and Henning Research Associates, Inc. It was quite a step to take after 29 years with General Motors. However, our relations with General Motors are still very close; and this has given me a chance to do some things I have wanted to do for a long time. We have been very fortunate in view of current economic conditions in getting underway. We are rolling and are very happy."

I had a long letter from Frank Pierson, who is vice-president of Manufacturing for Q-Tips in Long Island City, N. Y. In part, his letter is as follows: "I was glad to get Brig Allen's note that you had offered to take over the class notes. We get darn little publicity now. As regards the 30th reunion, I expect to go if I can fit it in the schedule. It happens my daughter Peggy graduates from Mount Holyoke in '59 and it may be the dates will conflict. You can guess where I'll be if they do conflict. As regards the Cape, New Hampshire, or Maine, I would favor the Cape or nearby New Hampshire. It can be mighty cool in Maine in early June. Thirty years out means some of us are not as warm-blooded and vigorous as we once were.

"We moved last July to 1133 Midland Avenue, Bronxville 8, N. Y. In effect it was a double move, because we moved not only location but also style of living. For 20 years we have lived in a house, with a lawn to mow, gardens to tend, the sidewalk and driveway to shovel out in snowy weather. Now we are back in an apartment – no control over the furnace (it's always too hot or too cold) or the hot water. But we have no lawn to mow, no sidewalks to shovel. It has its advantages when we are no longer interested in playroom area for the children.

"My new job is heaps of fun. Financially no comparison with a big job in a big company, but it has variety and challenge. Variety gives it interest, challenge is a great stimulant. I often tell my friends our activities and balance sheet look like any big corporation's report except where their reports say '000 omitted' we leave that out. In the process of diversification we recently purchased the Practical Electric Products Company. Also, we are expanding the parent company and its line. So I'm looking at new plant sites, attending packaging shows, dealing with patent attorneys, and so forth. And naturally, we have our share of labor relations problems. As I've had consultant experience in labor relations, I'm also the company representative with the union. I always wanted to work in a small company but felt that it might be hard to start there; instead, I started with the big ones and moved here about two years ago. I wish I had made this move five to ten years earlier, but such decisions we cannot always make unilaterally. As do most people in the smaller companies, I put in more hours at work each day. But I'm finding I'm less tired at the end of the day. Probably due to the stimulation of variety and challenge. I haven't taken a vacation since I started with Q-Tips, Inc., but I haven't missed it. I've had a couple scheduled, but for one reason or another had to postpone – eventually the postponement became permanent. But I do get off for important events like a 30th reunion. So even this has its compensation; I certainly do not feel I'm shortchanging the company when I take such holidays."

And a note from Jim Magenis, who is apparently leading an exciting life. Jim writes: "News about me? Presently engaged in flying DC-7C's New York - London - Paris - Frankfurt - Rome - Beirut-Lisbon-and so forth. Plan to be flying our Boeing 707 jets come this fall. They will make an already small world half again as small. My spare time (?) is kept occupied with preparing number one boy for Georgetown this fall, convincing number two boy he will have to be on the ball to enter M.I.T. in the fall of '59, and still being twisted around the finger of number three, a girl. Had the pleasure of a visit from Dick Piez, who now resides on the West Coast and is in business for himself and came east to introduce his product into the New York market. Hope I may be able to see you all on our 30th."

A short note from King Couper, who is in Washington with the Navy in the 'Cave of the Winds.' King reports he has seen Tom Speller in Buffalo.

When we go back to press in the fall, we'll be only a few months away from the 30th reunion. Frank Mead is getting the committees together; and I am sure that before the next Review appears, you will have had the first announcement from

Frank.— FISHER HILLS, *Assistant Secretary,* 62 Whittemore Avenue, Cambridge, Mass.

1930

Elias Klein was chairman of Session M on Shock and Vibration at the 55th meeting of the Acoustical Society of America in May.

From the news editor of Beckman and Whitley, Inc., San Carlos, Calif., we have received word that Captain Howard T. Orville, U. S. Navy (retired), was recently named to the new post of vice-president of that company. In this position Howard will assist the Instrument and Missiles Divisions as well as the board of directors in long-range scientific and technical planning. Previously he established an illustrious career with the U. S. Navy, having continued emphasis on his many meteorological achievements. He is currently in the national news spotlight because of his extensive work on President Eisenhower's Advisory Committee on Weather Control. It was largely due to Howard's efforts that the Navy developed methods for locating and tracking hurricanes and typhoons by radar – a development which has practically eliminated loss of life in the United States due to these storms. Prior to joining the San Francisco Peninsula concern, he was a technical consultant for the Friez Division of the Bendix Aviation Corporation.

From the *New York World Telegram and Sun* comes word that on March 31 our classmate Rear Admiral Schuyler N. Pyne took over as commander of the Brooklyn Navy Yard, transferring from the previous position as assistant chief of the Bureau of Ships in Washington, D. C. He and Mrs. Pyne are very happy to be back in Brooklyn. They have three children: a son, Richard, 26, who is a marine lieutenant; and two daughters, Sally, 22, a senior at George Washington University this past year and Ellen, 16, who will go into her senior year at high school this coming fall.

In the *Electronic News,* dated April 21, 1958, we came upon an item concerning Herm Scott's company – H. H. Scott, Inc. – a high fidelity component manufacturer in Maynard, Mass. The company has made known the fact that its new component, which acts as a central control center for a complete stereo system using two separate amplifiers, is now in full production. Called the Stereo-Dapter, the new component has a master volume control over both amplifiers and allows the playing of stereo records, stereo tape, or stereo A.M.-F.M., as well as monaural records with a stereo cartridge.

Al Shepherd, Jr., recently completed 20 years of service as chief metallurgist of the Taft-Peirce Manufacturing Co. of Woonsocket, R. I. He lives on a pre-Revolutionary farm of 50 acres in North Smithfield, R. I. His son, Allen G. 3d, graduated from Harvard last month (June, 1958). Al is currently covering an assignment with the American Society for Metals as a member of the national committee on selection of gage materials, and is writing an article for the 1960 A.S.M. handbook.

At the 66th annual meeting of the American Society for Engineering Education held June 16 to 20, 1958, our classmate John Vennard was one of the two discussers at a session on Civil Engineering, Sanitary Engineering, and Applied Hydraulics.

Graham Walton's paper "Relation of Treatment Methods to Limits for Coliform Organisms in Raw Waters," which was published in the *Journal of the American Water Works Association,* October, 1956, was selected to receive the A.W.W.A. Purification Division's Award. This award was presented at the Dallas meeting of the Association on April 21, 1958. Graham's current assignment is that of engineer in charge, Water Conservation Studies, Robert A. Taft Sanitary Engineering Center, U. S. Public Health Service, Cincinnati, Ohio.

Bill Wannamaker has been working as a consulting engineer in the field of electronic instrumentation for the last three years. He says he gets up to Boston and Providence occasionally and hopes to visit M.I.T. during one of these trips. Bill sends his best regards to all.

Wes Wedemeyer is still practicing architecture with Bill Hecker'42 in Saint Louis with the firm of Wedemeyer and Hecker. They do commercial and industrial work mainly, but they have also designed 11 fraternity houses in the past six years. Wes's daughter, Kathie, graduated from Vassar, is married, and lives in Westerly, R. I. She has one son. Wes sees Larry McDaniel frequently when Larry is in Saint Louis. Wes also told us that he and Dave Wells (who also lives in Saint Louis) are both active in the local Alumni Club. He saw Ralph Jope last April and also saw Dean Pitre, who was in Saint Louis to interview scholarship aid applicants.

Bert Whitten sent us a note just in time to make the July issue of The Tech Review. He is still with the Boston Gas Company as assistant plant superintendent at Everett, Mass. He has a daughter, Jane, who was a senior at Jackson College this year in the Biology Department, and a son who rounded out his third year at the New Hampton Preparatory School in New Hampshire this year. Bert and his family live in West Roxbury, Mass.

The following changes of address have been called to my attention: Harold R. Anderson, 43 Stark Street, Nashua, N. H.; Ralph H. Balch, Celanese Corporation of America, Box 1414, Charlotte, N. C.; Dr. Bernard Canter, 109 Wayne Street, Springfield 8, Mass.; William W. Driscoll, Crest Road, Framingham, Mass.; Ciro C. Martinelli, 251 Edgerstown Road, Princeton, N. J.; Henry O. Pattison, Jr., Benton and Bowles, 666 Fifth Avenue, New York 19, N. Y.; Dr. Walter W. Soroka, 1485 Rancho View Drive, Lafayette, Calif. — GEORGE P. WADSWORTH, *Secretary,* Department of Mathematics, Room 2-285, M.I.T., Cambridge, Mass. RALPH PETERS, *Assistant Secretary,* 249 Hollywood Avenue, Rochester, N. Y.

1931

Our deepest sympathy to Vice-president Claude Machen who, we understand, was laid up in the hospital for three months due to serious burns received while installing a counter top in his kitchen. Word from Howie Richardson advised that Claude returned home about April 1.

Enjoyed hearing from Charlie Fingar, who wrote: "Since leaving Tech, I've bounced around quite a bit – Albany Storage Corp., Telautograph Corp., Canada Dry Ginger Ale, General Electric, New York Central System – and finally think I've settled down at 48 with Universal Atlas Cement (U. S. Steel Subsidiary), now as packing and loading foreman for Hudson Plant. Am married to former Nellie Ames Belknap these 18 years, but no children – yet!"

A recent news release tells that Alex Kuhnel has been named manager of The Austin Company's Special Devices Division. Since it describes his career and is of interest to all who knew him, we are quoting the release as follows: "Alexander H. Kuhnel has been named manager of The Austin Company's Special Devices Division, with headquarters at the New York Port Authority Building. Kuhnel joined Austin's Special Devices Division as an electrical engineer in the summer of 1944 and directed its industrial and military research and development program as division engineer from 1947 to 1955, when he was named assistant manager of this division. Kuhnel studied at the Massachusetts Institute of Technology and Columbia University and spent 15 years in design work with Gibbs and Hill, the New York Board of Transportation, and the M. W. Kellogg Company prior to joining the Austin organization. He is an active member of the American Institute of Electrical Engineers, the Society of American Military Engineers, and the National Society of Professional Engineers. He is currently a director of the New York County Chapter of the New York State Society of Professional Engineers and a member of the nominating and research and policy committees. Previously he has headed the Chapter's education committee. He lives at 118 Orchard Lane, Berkeley Heights, N. J."

An article in the *Hartford Times* of April 11 tells of the marriage of Mrs. Ernestine A. Saunders to Ed Greene of Knollwood Road, West Hartford, on April 4. They planned to leave on May 4 by plane for Hawaii for a month.

Word from The Technology Review Office mentions that Jim Fisk, Executive Vice-president of Bell Laboratories, is listed as a member of the Science Advisory Committee in *Science* Magazine for April 11, 1958. As is probably mentioned elsewhere in The Technology Review, M.I.T. was well represented on the Science Advisory Committee with Dr. Killian, General Doolittle, Professor Jerome B. Wiesner, and Professor Jerrold R. Zacharias. From the same source, we learned that Don Sinclair participated in a panel discussion at the 1958 Institute of Radio Engineers convention in New York during March. The subject was "Changing Demands on the Breadth of Electrical Engineering Education."

Gordon S. Brown, The Technology Review Office also reports, spoke on "Implementing New Curricula" at an Electrical Engineering Session on the theme Educating the Electrical Engineer

of 1975 at the 66th annual meeting of the American Society for Engineering Education in June.

Changes in address reported since our last letter include: Edward F. Abbott, 3630 La Salle Street, Racine, Wis.; Herbert F. Bariffi, 7336 West Manchester Boulevard, Los Angeles 45, Calif.; Roger P. Brown, Box 7338, El Paso, Texas; Harland A. Danforth, Jr., Danforth Associates Pasco de la Reforma 369-801, Mexico, D. F., Mexico; Eugene J. Lourie, Chevrolet Engineering Center, Box 246, North End Station, Detroit 2, Mich.; William Nixon, 4516 Eutaw Place, Knoxville 9, Tenn.; Arthur R. Partington, 365 Manchester Road, Ridgewood, N. J.; Charles W. Seaver, 47 Rosalie Road, Needham Heights 94, Mass.; Charles W. Steinbach, 161 Hillside Drive, Lewiston, N. Y.; Dr. Harmon J. Truax, 4218 West Ruffner Street, Seattle 99, Wash.; Charles E. Starr, Jr., 17 Pine Ridge Dr., Summit, N. J. — EDWIN S. WORDEN, *Secretary*, 9 Murvon Court, Westport, Conn. GORDON A. SPEEDIE, *Assistant Secretary*, 90 Falmouth Road, Arlington 74, Mass.

1932

All of us will be distressed to learn of the death of Donald D. Swift, in Hartford on March 7, 1958. Don had been president of M. Swift and Sons Company for 16 years and was responsible for the manufacture of much of the aluminum foil formerly used in the manufacture of flash bulbs. The sincere regrets of his classmates go to his wife, Marion Kohler Swift; his four sons; and his parents.

Bob Semple's class letter, with the post cards addressed to me, brought some very interesting mail. Dick Huested, IX-B, has been transferred from Washington, D. C., to Kansas City, Mo., as manager of operations for the Aviation Gas Turbine Division of the Westinghouse Electric Corporation. John Strickler, XVI, writes as follows: "After some 22 years with Bell Aircraft Corporation in Buffalo — working up to executive chief engineer, then assistant vice-president — Engineering, and finally division manager of the Research Division — I left Bell last December 1 to join Boeing Airplane Company in the Pilotless Aircraft Division as assistant to the vice-president of Boeing. New address: 1434-92nd Avenue Northeast, Bellevue, Wash." Another move has been reported by John Crowther, X: "After 20 years in New York (assistant sales manager, Stauffer Chemical Company), I returned to my birth state, Kansas, in 1955. In March, 1957, I continued my western drift all the way to Los Angeles. I am now general manager of the Chem-Mill Division, Turco Products Company, helping make things that fly. My oldest daughter is Oberlin'60." Howard Kinzer, I, has left his position as assistant purchasing agent of United Carbon Company in Charleston, W. Va., to become chief right of way agent of the State Road Commission of West Virginia.

Some news has come from our academic group. Jack Millman, VIII, Professor of Electrical Engineering at Columbia University, reports that he has just completed his third textbook called *Vacuum Tube and Semiconductor Electronics*. The other two, *Electronics* and *Pulse and Digital Circuits*, are being translated into German, Spanish, and Japanese. Gerner A. Olsen, I, has been promoted to professor of civil engineering at the City College of New York. He has also published a new book entitled Elements of Mechanics of Materials. He reports that his three children ranging from 12 to 18 years of age, his church and Sunday school activities, and his teaching keep him very busy. Your Secretary has had a chapter published in the new *Handbook of American Civil Engineering Practice*. The chapter is on "Refuse Collection and Disposal." Another chapter will be published later this year in the *Handbook of Radiation Hygiene*, this chapter to be entitled "Disposal of Radioactive Wastes."

Considerable news has come of the children of some of our classmates. Our local paper in Winchester, Mass., published a picture of a gay party in Paris with the following caption: "The Camera Catches Nancy Ross, daughter of Mr. and Mrs. Herbert F. Ross (XV), at the reception given by President René Coté of France to the members of the United Press in Paris. Miss Ross graduated from Winchester High in 1953 and from Smith College in the Class of 1957, Phi Beta Kappa and Magna Cum Laude. She spent her junior year in France and is now living in Paris and working as private secretary to M. Balband of the United Press." Bill Pearce, VI-A, wrote that his daughter Anne, now at Westbrook Junior College, is going to marry Bruce Brown, a student at Florida State University in Tallahassee. The wedding will take place at their home in Sharon, Mass., and the bride and groom will continue school at Florida State. Bill, who was loot chairman of our reunion last year, hopes to spend a few weeks each year inspecting that University and perhaps picking up some more loot for our 30th reunion. Harry B. Green, X, writes: "My daughter is about to present me with a grandchild, our first. My older boy, Harry, enters Tech this fall — Class of '62, gad! Where did thirty years go? Have been in the theatre business all these years, 17 of them in Denver (treasurer, Fox Inter-Mountain Amusement Corporation). Never see any of the Class, but enjoy following everyone's doings in The Review." Larry Wagner, I, really takes the cake! He has two sons at M.I.T. Lawrence, Jr., is Class of '60 and Carl E. is a Sloan Scholar, Class of '61.

In the midst of this recession it is encouraging to read the words of one courageous administrator, Bob Semple, X, our Class President, and President of Wyandotte Chemicals Corporation. A release from his office stated: "Our confidence in the future justifies keeping our research and development activities at good levels and budgeting more to build our long-term sales position, thus doing everything possible to gear ourselves so that we may fully benefit from the eventual upturn in the economy." We need more of that.

Keep the cards coming and have my files overflowing so that I can transmit many of these interesting tidbits to our classmates. We are always looking for news! — ROLF ELIASSEN, *Secretary*, Room 1-138, M.I.T., Cambridge 39, Mass.

1933

The necessity of preparing class notes two months ahead of publication makes it impossible to report factually about the wonderful time we had at our 25th reunion. In prospect, we can report glowingly of the good intentions of a record-breaking number to spend a long week end on campus; For a Class launched in the midst of business doldrums, our mates have given an excellent account of themselves and have shown a spirit and interest in the Institute that is heartwarming to your officers.

We report with deep regret the death of Robert H. Hanlon, II, last February in Reseda, Calif. If you have further information on Bob's passing, we would be grateful for it for the benefit of his many friends in the Class. A few promotions and changes of assignment that will be of interest: Alfred G. Payne, VI, is now manager of design engineering for Monsanto's Plastics Division in Springfield, Mass.; Draveaux W. Bender, IV, has resigned as Urban Renewal Co-ordinator for Cambridge to devote his full energies to his consulting activities. Gilbert W. King, V, has joined I.B.M. in Ossining, N. Y., in the research division to develop new techniques in automatic information processing. Gil had been recently with International Telemeter Corporation in Los Angeles.

Cal Mohr provides news of our Class in one of his welcomed reports: Larry Jacobson, VI, heads the Kady Camera Company in Chicago and publishes a magazine of a semitechnical nature for the camera trade. Larry and his wife have five children, ranging from 17 to 8 in age. Also, Dick Smith, I, is buyer of forest products and manager of treating plants for the Rock Island Railroad, which involves spending a good deal of time away from Chicago. Chuck Thumm, XV, who is in the construction business in Chicago, also finds it necessary to be away a lot; Chuck's daughter is in college this year. And Cal reports, too, of seeing Sam Hopper, VII, in Indianapolis, where Sam is professor of public health at Indiana University Medical School. Sam's oldest son is a member of the diving team at the Riveria Club in Indianapolis.

Sam Lieben, VI, reports a move to Englewood, N. J.; in addition to being a partner in the Broadway Tire Company in New York City, Sam is a director of Ferro Dynamics Corporation and a director of Copper Foil Corporation, both in New Jersey.

Three of our classmates have recently broken into print: Don Fink, VI, with a 10-year review of the activities of the Joint Technical Advisory Committee of the Institute of Radio Engineers. Don is currently president of I.R.E. and, we suspect, finds it difficult to spend much time between head table assignments and directing research at Philco, which is Don's normal principal occupation. We have been remiss in not noting V. Lawrence Parsegian's interesting and provocative commentary on atomic secrecy in the article "Is There an Atomic Curtain?" in the *New York Times Magazine* last October 14. Larry is dean of Engineering at Rennselaer Polytechnic Institute in

Troy, N. Y. And Dr. Edward R. Loftus, IX-C, spoke last spring in Lynnfield, Mass., on the subject of fluoridation. Doc is a dentist in Quincy.

Now, let's have some news of your activities for the class notes in the fall! R. M. KIMBALL, *Secretary*, Room 3-234, M.I.T., Cambridge 39, Mass.

1934

I journey to the University of California at Berkeley in June (old news by the time you read this) to deliver an address on "Graduate Education in Engineering" at the 66th annual meeting of the American Society for Engineering Education. I look forward to the California trip with mixed emotions, as it means I will be unable to take part in our reunion activities in Cambridge. However, you may be assured that I will join you all for our 25th, upcoming in June of 1959! Philip Nudd will join me at the A.S.E.E. meeting, presiding at the Conference on Educational Methods which will be held on the theme, "Gifted Freshmen and the High Drop-Out – Are They Compatible?"

More conference notes – John O. McLean, national President of the American Society of Lubrication Engineers, was principal speaker at the Society's annual dinner in Richmond, Va. He sees lubrication engineering as "a wide open field for budding engineers."

Promotions and appointments – Great Lakes Steel Corporation, subsidiary of the National Steel Corporation, has selected Wilfred D. MacDonnell for its presidency. Will left Bethlehem Steel in 1957 to join National Steel as assistant to the executive in charge of special assignments. George H. Priggen, Jr., has been promoted to assistant division manager for the southern zone of Socony Mobil Oil Company's White Eagle division in Kansas City. He had been manager of automotive sales for White Star division in Detroit. Ernest Massa, former Vice-president, will continue as division vice-president when the Massa Laboratories, Inc., becomes a part of Cohu Electronics, Inc., of Los Angeles.

New company – Andy N. Mooradian is president of a newly formed company, Tritex Mills, which will convert synthetic fabrics for use in men's and boys' clothes.

Recent addition – Their fourth child, a daughter, Lauren Geraldine, was born to Larry and Jerrie Stein on April 20.

Mal Stevens reports that our 25th Reunion Committee is rapidly being organized. Five of our classmates at M.I.T. are going to serve as an executive committee of the Reunion Committee: Joe Bicknell, Del Keily, Walt McKay, Walt Wrigley, and Mal Stevens. Letters are going out to other Greater Boston classmates asking them to fill out the Committee, and at the time of writing these notes the following have said they will serve: A. D'Arcey, Les Doten, Lou Frank, Sam Groves, Ed Nowell, and Carl Wilson.

At the time these notes are being written, we still need a classmate who will take on the job of a 25 year class book. There is no reason why this job has to be done in Cambridge, although the Institute is, of course, ready to do general mailings to acquire basic information for such a book. Once information is obtained, the follow-up to get as complete information as possible and the actual preparation of the book can be done in Saint Louis or Tampa just as well as Cambridge. We expect advertising this way in the class notes will bring a rash of applicants for the reunion book task.

The usual pattern now of 25 year reunions is to hold them on campus, and the Institute turns over the entire use of one of the big dormitories to the Class. The important thing is to have our classmates who make long-range vacation or travel plans include the week end of June 13 through June 15, 1959, for their 25th reunion at M.I.T. – *Secretaries:* WALTER MCKAY, Room 33-217, M.I.T.; MALCOLM S. STEVENS, Room 1-139, M.I.T., Cambridge 39, Mass.; JOHN A. HRONES, Vice-president for Academic Affairs, Case Institute of Technology, Cleveland 6, Ohio.

1936

We were beginning to think that Hank Lippitt had gotten so involved with his new west coast location that he was losing his title of ace news reporter. However, Hank has just come through with a note and a reprint of one of his articles from *Oil and Gas Journal*. To be sure, there was nothing regular about this article. An editorial note titled "Too late to change" read something like this: "There comes a time when you've got to go to press with what you've got." To make a long story short, Hank, all through the article, was bemoaning the fact that every time a gas company thinks it has found a way to escape Federal Power Commission control, the courts overrule the company and uphold the F.P.C. As an example of some hope still remaining for gas producers, he cites the "Saturn case" pending before the Supreme Court. You probably have guessed by now what happened. The Court denied the petition, Hank rushed a revised paragraph to the *Journal*, revision was impossible because it had gone to press.

Bernie Schulman was an active lad at school, but all we can manage to get from him now is a change of address. Bernie, other than living at 100 Halifax Road, Akron 13, Ohio, what in the world have you been doing? Jim Craig now lives within a cheap toll call of Greenwich: Lake Drive, Pleasantville, N.Y. Give me a ring – I will take the notes. Dick Farmer's new address is 121-20th Avenue Circle, Texas City, Texas. This is quite a switch from Florida. Oswald Falls made a west to east change – California to General Electric Company, Building 651-Building 2, 1 River Road, Schenectady 9, N.Y. This doesn't look quite right; how about setting us straight on this and other things? Henry Johnson is now at 3000 Quarton Road, Bloomfield Hills, Mich. Sherm Shull has left New Jersey for Riverside, Ill. The address is 281 Bloomingbank Road. Lea Spring is at 114 Washington Avenue, Crookston, Minn. John Sharp's new location is 88 Ridgeview Road, Poughkeepsie, N.Y.

Spent last evening with Larry Kanters here in Pittsburgh, Larry is merchandise manager of the Downstairs Store of the Joseph Horne Company. Between his activities with the Scouts, teaching at the university, giving skiing instructions, and trying to keep up with his wife and four children, he has managed to keep within two pounds and eight ounces of his weight while at Tech. The Kanters plan on spending some time on Cape Cod this summer; if they can arrange to go through New York City, a minor class reunion might be arranged.

Captain Charles Trescott, U.S. Navy retired, has been named manufacturing manager of Zenith Plastics Company of Gardena, Calif., a subsidiary of Minnesota Mining and Manufacturing Company. Chuck will be responsible for all manufacturing departments of the southern California plastics firm, including tooling and production. Bill Hope has been transferred to the Kidder Press Company, a subsidiary of Moore Corp., as manager of research and development. Kidder makes printing presses and slitters for the graphic arts industry. Bill's new address is 121 Broadway, Dover, N. H.

In the November notes we wrote up Fred Prahl. We now have additional news that he has been elected a vice-president, research, Compo Shoe Machinery Corporation, Waltham, Mass. Fred's home address is Harvard, Mass. Ben Fogler is now in Manila as a project director of a team of four men supplying technical guidance to the farm co-operative movement of the Philippines. He reports that it is a real challenge and a most interesting assignment. It is similar to his previous job in Egypt. He is still with the Arthur D. Little Company, Cambridge, Mass. The Foglers have four children: 17, 16, 11, and 8 years old. The whole family is in Manila and can be reached through U.S.O.M./I.C.A., A.P.O. 928, San Francisco.

Tommy Blakeman has moved his family (Virginia Davidson, IV, '34, and four children) from Detroit back to Princeton, N. J. He has hung out his shingle as a planning advisor on state, metropolitan, and county planning. The family spends summers on Cape Cod, and Tommy occasionally lectures at Tech. The Reverend Ed Cahill's new address is 1681 East Clifton Road Northeast, Atlanta 7, Ga. For a complete writeup on Ed, see class notes in the June '57 and December '57 issues.

George Schliestett is now living at 841 South Oak Knoll Avenue, Pasadena 8, Calif. Vice-admiral Jack Sylvester is at the Naval Amphibious Base, Coronado, San Diego 55, Calif. (Note promotion from rear-admiral.) Bill Nonnenman is now up in Canada: 1425 Mountain Street, Montreal, P.Q. Dan Pearson's new address is 20342 Pierce Road, Saratoga, Calif. Colonel Bill Call has left Washington for Detroit: O.T.A.C. Fort Wayne.

We end this series of notes with the news of the passing away of another of our classmates. Professor André Jorissen died February 27. He was head of the Hydraulics and Hydraulic Engineering Department at Cornell University. Surviving are his widow, Lucia, and his daughter, Miss Anne Jorissen. – JIM LEARY, *Secretary*, One Putnam Park, Greenwich, Conn.

1937

Norm Matthews reports that he is with the General Electric Co., Metallurgical Products Department, as manager of Diamond Engineering. Norm recently co-authored an article on "Performance of Man-Made Diamonds" which was published in the April issue of the magazine *Machinery*. Currently he is giving a series of talks on man-made diamonds. Norm, his wife Margaret, and their four children live at 690 Rivard Boulevard, Grosse Pointe 30, Mich. Bert Bennison is assistant director, Medical Research Division, Esso Research and Engineering Co., Linden, N. J. The Bennisons – Bert, Lella, and their four children – live at 684 Rahway Avenue, Westfield, N. J.

Irv Tourtellot upon graduation joined the Detroit Edison Co. as an engineer. From 1940–1953 he worked for the Crandall Dry Dock Co., Cambridge, Mass., as an engineer, rising to vice-president in charge of building docks in North and South America, Europe, the Near East, and the Far East. In 1953 he joined L. C. Gustin and Son of Winchester, Mass.; and in July, 1954, he became chief engineer for Charlotte Engineers, Inc., Charlotte, N. C. Irv then joined the A.E.A. Engineers, Inc., of Charlotte, N. C., as vice-president. From November, 1956, to date he has been with Charles T. Main, Inc., as structural engineer. Irv is the publicity chairman of the North Carolina section of American Society of Civil Engineers and also is the chairman of the Charlotte area M.I.T. Alumni Fund. The Tourtellots – Irv, Louise, and their two boys – live at 126 Hillside Avenue, Charlotte, N. C. Charles W. Cornforth is with Public Service Electric and Gas Company, Trenton, N. J. and has recently been promoted to assistant industrial relations manager. Charlie Cardani is with the United Shoe Machinery Corp. and recently gave a paper on "Evolution of a Small Lot System for the Production of Electronic Equipment" at the second National Conference on Production Techniques in June. Jack Ostrer is the proprietor of the One Stop Cleaners of Bedford and Arlington. For relaxation, Jack is an avid ham radio operator. The Ostrers, with their two children, live at 150 Radcliffe Road, Belmont, Mass. Conover Fitch, Jr., is a member of the Boston architectural firm of Perry, Shaw, Hepburn, and Dean, and he has been named to the advisory committee of the town of Nahant, Mass. John P. Mather has had over 20 years of research, production, and administrative experience with General Printing Ink Co., division of Sun Chemical Corp. John was recently appointed production engineer of the graphic arts group. Dave Tuttle is professor of electrical engineering at Stanford University, California. He has just published (John Wiley and Sons) the first volume of *Network Synthesis*, which is the result of teaching such a course for 10 years. Dave took his first sabbatical (in 1954–55) to do more of the same in France, and he is halfway toward the next (likely to be in Spain this time).

Nestor Sabi is with Dorr-Oliver, Inc., Stamford, Conn., and has recently been appointed division manager of International Sales. Nestor first joined the organization in 1941 as a research engineer, and since 1945 he has been a member of the International Sales staff. George Weppler is vice-president and general manager of Harvey Hubell, Inc. George has just been elected to the board of directors of the Park City Hospital, Bridgeport, Conn. The Wepplers live at Old Hill Road, Westport, Conn.

From our distaff side, Mrs. Nancy O. Klock reports: "For the first time since graduating, I have not worked this year. But next year I hope to teach at one of our two neighboring colleges. Last fall my husband and I went on a safari in British East Africa. We enjoyed it so much we are taking our three sons (aged 18, 14, and 12) plus two other teen-agers this summer. Very busy getting ready." Sounds like a fine trip, Nancy, and I hope you will give us an account of your experiences in the fall. The Klocks – Nancy, her husband Felix'36, and the three boys – are living at 63 Henry Street, Manchester, Conn.

Joe Heal, our class gift chairman, reports: "For those who did not receive the last class agent's letter, I would like to report on how we have been doing through May 1. Actually, the figures used are not that recent. Since the I.B.M. rundown figures are about one month old when received. Last fall we kicked off our first class personal solicitation program. The results have been encouraging. Where we have previously been at the bottom of the heap, with only three or four people giving $100.00 per year or more, to date more than 20 classmates have given $100.00 or better. In addition, several have been influential in having their companies give from $500 to $2,000 each. This year up to April we have received over $8,000, not including class insurance receipts of approximately $1,500. With our 25th reunion only four years away, we should be striving as a class for broader participation. Our school's fine reputation in so many ways reflects to our credit that no matter what our financial status, we should be able to spare some funds for helping to run or improve the Institute.

"In checking statistics from such colleges as Yale, Princeton, Harvard, and Dartmouth, we find that participation runs up as high as 70 per cent. In reviewing our '37 contributions through March, we find that 150 have contributed from our active list of 577, or 26 per cent. It is interesting to note in examining the class records that the older classes have a higher gift participation than the younger classes – participation running up to 55 per cent. It seems odd that from an active list of 577 Alumni, only 150 to 175 actively contribute. We all realize that some people feel they received more than others from attending the Institute; however, it's hard to believe that any of us got through without a feeling of real value received. The ability of each of us to give may vary widely, but the important thing is that we give something, whether it be $10, $100, or $1,000. Yes, several have given $1,000 or better in one year. By giving and by being active in class and Institute affairs, we make ourselves much more a part of the Institute.

"When I talked with Ralph Webster recently, he said that a member of his firm stated a philosophy which made sense to me. No matter when we went to Tech, none of us ever paid the full tab. This year, even after raising the tuition to $1,300, the student is paying only half the cost of his course. In the future, as in the past, this will have to be made up by Alumni giving, investments, or tuition increases. It does appear that we all have moral obligations to return to the Institute over a period of years the amount that we were subsidized. Since not everyone will accept this obligation, it means that many who feel strongly about it must do more than their share. If Alumni don't give voluntarily, perhaps at some future date incoming students may have to accept more formally the responsibility of making good the difference between their actual payments and their true college expenses. The other alternative is to support the schools and colleges with public funds."

Windy Johns, our 25th reunion chairman, has just returned from a business trip to France, Switzerland, Belgium, and England, where he has been setting up marketing and manufacturing of products made by his company, the Jones Manufacturing Co. He already has places in Canada and Mexico. Windy's message in regard to the reunion is: "Start planning now for a gala vacation – reunion time in June, 1962. You know it really isn't too far away considering how short the time seems since we were back at the Institute. If you have been to one of the reunions, you know what pleasure and enjoyment are in store for you. If you haven't, then you have only to take our word for it that a grand time will be had by all. So, block off that first part of June in '62 and see us all for a grand time."

By the time these notes appear, a number of you will have attended the June Alumni Day meeting. Even though this was an off year, a number of our Class planned to go back; and our President, Phil Peters, took an active part as chairman of the Alumni Day banquet and entertainment committee. Expanded facilities for handling the whole reunion on campus add to its pleasantness. Speaking of Phil Peters, he tells us that he recently had an enjoyable telephone conversation with Ralph Chapin. The Chapins all were well, and Ralph seemed to be as busy and successful as ever. At Alumni Council meetings, three '37 men typically get together for a visit and dinner. Tom Kinraide, Ralph Webster, and Phil Peters are our three Alumni Council representatives; and despite business pressures, there always are one or two of them, and usually three, on deck for each Council meeting.

When I first took over the job as secretary, I had many doubts. But you, the members of our Class, have co-operated wonderfully and made this year a rewarding experience. Have a pleasant summer and drop a post card to one of your secretaries while on your vacation. – ROBERT H. THORSON, *Secretary*, 506 Riverside Avenue, Medford, Mass. S. CURTIS POWELL, *Assistant Secretary*, Room 5-323 M.I.T., Cambridge, Mass. JEROME E. SALNY, *Assistant Secretary*, Egbert Hill, Morristown, N. J.

1938

We are indebted to Mr. W. C. West'11 for sending additional information concerning his son, Dick, whose death we recently reported. He writes: "On December 13, Dick was flying our company Apache from Rochester to Chicago. He went down in Lake Erie and, judging from his 'Mayday' call that was picked up by a Trans-Canada air liner, both carburetors iced up.

"Dick held the rank of commander in the Navy and had just retired, a week before his death, as national president of the Naval Reserve Association. He was commander of the reserve unit at Glenview Naval Air Station, Glenview, Ill. Dick was president of West Instrument Corp. and Industrial Controls, Inc., of Chicago and chairman of West Instrument, Ltd., of England." Dick is survived by his wife, Betty; a 13-year-old daughter, Wendy; and a 9-year-old son, Tommy.

We also have word of the decease of Hugh Wainwright, July 31, 1955. If anyone reading this column can give us added information, we should be pleased to receive it.

Bob Johnson has sent along a letter from Bill Roper: "Once again it looks as though the Army has come between me and my plans to attend a class reunion. When I told you earlier that I would plan to come to the 20th, I had fully expected to make it. However, it now turns out that we will be leaving for the West Coast on the 19th and, hence, will be heavily involved in preparations during the week end of the reunion. I'm sure we would never be able to face the packers on Monday morning after a Saturday night at the Chatham Bars Inn.

"In other respects the Army has been much kinder to us. I've had a fine year here at the Army War College studying national strategies and associated military problems. My forthcoming assignment is to Fort Ord, California, where I will command an engineer combat group for the first time.

"I expect that next summer will bring another change of assignment – probably to an overseas station. Since our last overseas duty was in Labrador, we are hopeful that we may go next to some more pleasant location, preferably in Europe. If all goes well we should be back in the States in plenty of time to be available for the 25th reunion. I certainly hope we can make it then. Dot joins in asking that you convey our regards and regrets to those attending the reunion."

Bob notes that Sam Steere is also missing the reunion because of military orders. The Air Force is sending him to Okinawa for three years starting about June 1.

Bill Harp has been promoted to technical associate in Technical Service Division at Humble Oil and Refining Company's Baytown, Texas, refinery. He is responsible for the adaptation of electronic computing equipment to solving engineering, scientific, and economic problems of the various staff groups at Baytown. For the past two years he has devoted his time primarily to the development of general coding and programming methods for the recently installed I.B.M. 705 electronic data processing machine. He has also been responsible for training approximately 40 members of the technical staffs in the uses of the I.B.M. 705.

A news item tells us that Colonel Staunton L. Brown, a native of Meriden, Conn., and commander of the Little Rock, Ark., District of the Corps of Engineers for nearly four years, has retired from military service to assume an executive position with the International Basic Economy Corporation (I.B.E.C.), a housing corporation in New York City. He was scheduled for transfer to Korea but announced his retirement to assume the new position with the world-wide Winthrop and Nelson Rockefeller firm.

The *Arkansas Gazette*, in an editorial lauding Colonel Brown for his outstanding work while there, said: "Colonel Brown did a splendid job in Arkansas and the progress of our river programs is a testament to his ability." In Arkansas, Colonel Brown supervised many projects, including the completion of the Little Rock Air Force Base, Table Rock Dam. Dardanelle and Greers Ferry Dams, key structures in the development of the Arkansas and White River basins, were begun during his tenure, and he also completed major construction programs at Blytheville and at Barksdale and England Air Force bases in Louisiana.

We also find that Lieutenant Colonel Fred Hurley has been assigned a post in Vietnam, where he is a member of the Military Assistance Advisory group in Saigon. Fred's wife, Mary, lives in Clearwater, Fla. Also in the news is Ralph Adams, who has been appointed chief engineer, General Products Engineering Department for the three sections of the Bendix Aviation Corp. located in Teterboro, Eatontown, and Red Bank, N. J.

Members of the Class have been actively writing and speaking. Y. T. Li was a member of a panel that discussed the future of process optimization. The event was jointly sponsored by several of the engineering societies. At a meeting of the Acoustical Society of America, Vincent Salmon was coauthor of a paper dealing with nondestructive testing by an impedance method, and Dwight Kennard was coauthor of one on data reduction techniques for flight vibration measurements. Miles Leverett, Jonathan Roehrig, Joseph Longcor, and Lester Kornblith were '38 men who participated in the Fourth Nuclear Engineering and Science Conference held in Chicago in March. Arthur Gould presided at a business meeting on industrial engineering at the annual meeting of the American Society for Engineering Education, University of California, Berkeley, in June. And Eric Reissner was chairman of a session on missile structures at the annual meeting of the Institute of the Aeronautical Sciences. – David E. Acker, *General Secretary*, Arthur D. Little, Inc., 35 Acorn Park, Cambridge 40, Mass.

1939

Joe Zeitlen gets the prize for long-distance letter writing this week, having written from Haifa, Israel, where he and family have a couple of interesting assignments. Joe is now dean of the Faculty of Civil Engineering at the Technion University. He is working with the U.N. and can be reached c/o the Israel Institute of Technology, Haifa, Israel.

Joe continued: "I have been interested in watching news from the clubs and classes in The Technology Review, and particularly felt conscience-stricken about never having reported – and soon the 20th anniversary will be around. Anyhow, for a short note: Since 1953 I have been with the United Nations Technical Assistance Administration, assigned to Israel as a soil mechanics expert. Since the beginning of 1958, have had the additional task of acting as dean of Civil Engineering of the Israel Institute of Technology. My family consists of my wife, grown-up daughter (18), daughter (4), and son (6), all with me.

"How's Life? With me this is a very interesting assignment, much work, and many problems. Have found major effort to require 'people mechanics' not 'soil mechanics.' Future? My U.N. assignment finishes in September. Expect to locate again in the U.S.A., if I can resist the temptation to remain on here. – Regards, Joe."

Hilda and I drove the youngsters about 125 miles south to see the famous zoo at San Diego. There we saw the George Cremers. At San Diego – not at the zoo. We're pleased to report George and Billie are great and are busy with their six youngsters. And their eldest daughter, Joanne, is a real beauty at 16.

Al Laker, former captain of our soccer team, and I spent a pleasant evening together a couple of weeks ago when we saw a champion English soccer team from Blackpool play the Los Angeles All Stars. On the English team was a 43-year-old, nicknamed Twinkletoes. He was just that. To see him run up and down that field reminded me of something we all used to be able to do but can't do now.

Bert Pacini has been named associate director of the division for technical operations at the Allen B. Du Mont Laboratories at East Patterson, N. J. Bert had most recently been in charge of television receiver engineering; and prior to joining Du Mont, he was associated with the U. S. Signal Corps Laboratory.

Bob Chase has been appointed superintendent of the El Paso refinery of the Texas Company. W. Robert Hydeman has accepted an appointment as manager of computer systems at Touche, Niven, Bailey, and Smart in their executive offices in Detroit, Mich. Good Luck, Bob, in Mahogany Row.

This completes the notes for another season. Hope you'll all have happy holidays this summer, and will be thinking ahead and planning your 1959 summer activities to include our 20th reunion. – Hal Seykota, *Assistant Secretary*, 416 Calle Mayor, Redondo Beach, Calif.

1940

This is the final column in the '57–58 Review. I hope that some of you will find time during the summer to write me so that we can start the fall with a bang.

The first item is from George Pollak: "In the past years I have been anything but a conscientious letter writer for the class notes! As a fact, I don't know when I wrote last, so I shall start way back.

"I spent a year at the Naval War College at Newport in 1950 and 1951 but only managed to get to Boston for some very brief visits. From there we went to the West Coast, where the family was installed in Coronado; and I went to sea for two years on the staff of Commander Amphibious Group One. Most of this period was spent around Korea and Japan. While I was at sea, I was presented with another offspring, a girl. In 1953 we came back East to Norfolk, Va., where I spent three years at the Naval Shipyard. In January, 1957, I was detached and spent two months in Washington prior to coming over here to be one of the assistant naval attachés.

"Not only is London a fascinating place to live, but the job is interesting; and the whole family seems to be enjoying this tour. My particular duties lie in the field of technical liaison with the Royal Navy, and there is a fair amount of travel around Britain involved to visit the various establishments and laboratories. We expect to be here for at least another year and then off to wherever the Navy decides."

While I was at La Guardia Airport recently, I saw John Casey, who is associated with Dick Speas as an aviation consultant. John presented me with their very attractive brochure outlining their services for the aviation industry.

Philip Darling has been appointed to head the Department of Planning of the city of Baltimore, Md. Previously, he was assistant director of the Baltimore Urban Renewal and Housing Agency in charge of planning and development.

Karl Pfister, 3d, has been promoted to the position of executive director for developmental research of the Merck Sharp and Dohme Research Laboratories Division of Merck and Company, Inc. Karl has been with Merck since 1942. In 1950 he organized the Synthetic Medicinals Department for exploratory work toward new synthetic drugs and in 1953 was appointed director of process research.

Clement Burnap joined the Technical Sales Department of Atomics International, a division of North American Aviation, Inc.

Monte Hearon presided at the symposium on the chemical nature of wood and bark constituents of the Division of Cellulose Chemistry Session at the April meeting of the American Chemical Society in San Francisco. Connie Schuerch was the author of a paper on extractives of sitka spruce delivered at this meeting, while Monte also delivered a paper on the utilization of pulping spent liquors.

By the time this item is in print, the 66th annual meeting of the American Society for Engineering Education held at the University of California at Berkeley will be history. Al Schlechten is scheduled to deliver a paper there on "The Challenge to Metallurgical Engineering Education," and John Arnold will speak on "Graduate Training for Engineering Creativeness."

On behalf of the class officers, your Secretary would like to wish each of you a pleasant summer of rest and relaxation. — ALVIN GUTTAG, *Secretary,* Cushman, Darby, and Cushman, American Security Building, Washington 5, D.C. SAMUEL A. GOLDBLITH, *Assistant Secretary,* Department of Food Technology, M.I.T., Cambridge 39, Mass. MARSHALL D. MCCUEN, *Assistant Secretary,* 4414 Broadway, Indianapolis 5, Ind.

1941

Weddings are getting to be pretty rare occurrences among members of the Class, so it's a pleasure to report the marriage of Lydia Averell Hurd to Alan Smith on April 5. Cy Kano'43 was best man. Mrs. Smith attended the Buckingham School and was graduated from Radcliffe College and the Harvard Graduate School of Education; Alan, having received bachelor's and master's degrees from the Institute, is now with Arthur D. Little, Inc. They will live in Hampton Falls, N. H.

A recap of Howie Samuels' success appeared in a recent issue of the *New York Times,* as follows: "From an original investment of $25,000, the brothers Howard and Richard Samuels put Kordite Corporation in a $10 million annual sales bracket and made it one of the nation's three largest integrated producers of polyethylene film products. The firm's original product, vinyl-covered clothesline, was developed in 1941 as a by-product of Howard's university thesis. In 1946, the brothers rented an abandoned schoolhouse for $35 a month; and in 1950, the company moved to a 100,000 square foot building and began to manufacture polyethylene film freezing and packaging bags. A favorable offer from Textron-American resulted in the sale of the company in 1955. Kordite foresees sales of over a billion dollars by 1960." Let's hope Howie makes it.

Sherman Crites has been named manager of marketing for the General Electric Small Aircraft Engine Department in Lynn, Mass. In his new position, according to the Lynn *Telegram-News,* he is "responsibe for formulating and recommending objectives for the department in terms of its products, services, customers, sales channels, and prices; and for managing all required marketing activities. He joined General Electric in 1950 in Lynn, and has held varying assignments there and at Cincinnati, Ohio. He and his family live in Wenham."

Also in a new position is Walt Turansky, who has joined the staff of Frank E. Downes Construction Co. of New Britain, Conn., as superintendent and estimator. And, not to be outdone, your Secretary is now with the G. E. Missile and Ordnance Systems Department in Pittsfield, Mass. After over eight years in the Boston area, it's hard to leave; but we're looking forward to enjoying all the advantages of the Berkshires. The secretarial duties will be carried on as before; for the time being, the Wakefield address will be in effect. Familiar faces in the new location are Rea Stanhouse, Bob Mayer, and Paul Cushman. Rea is in the same office that I am. After a tour in Schenectady going back at least to 1948, when I last saw him, he joined M.O.S.D. in Philadelphia, coming to Pittsfield seven months later. Now, less than a year after coming here, he's going to Saint Petersburg, Fla., as a field representative for the Department.

Lecturing at the University of Vermont on "Molecular Interactions with the Surfaces of Solids" was Albert Zettlemoyer, Professor of chemistry at Lehigh and formerly a research chemist for Armstrong Cork Co. At the 165th national meeting of the American Meteorological Society, Robert Fletcher was chairman of a session on Meso- and Micro-Scale Meteorology. At the 55th meeting of the Acoustical Society of America, Edith Rovner Corliss gave two papers: they were entitled "Mechanical Impedance of the Forehead and Mastoid" and "Correlation between Thresholds of Hearing by Bone and by Air Conduction for Normal Individuals".

Hank Avery reports of his doings as follows: "I spent a week in New York recently and had a chance to visit with Ted Walkowicz and his charming wife; Ray Harper, who is with the Ed Scherck Studios; and Nate Owen. I also had a chance to talk with Carl Mueller, who is vice-president of the Bankers Trust Company. I also recently saw Bill Bowes, Ed Murphy, and Knut Johnsen, who live in Pittsburgh. Bill is with the Atomic Division at Westinghouse; Ed is district manager for Linde Air Products; and Knut is with the Koppers Company. Another classmate I see quite frequently is Ralph Landau, who is executive vice-president of Scientific Design. Will Mott was in Pittsburgh recently, but because of conflicting plane connections we were unable to get together."

Have a good summer, all of you; let us know what you're doing, and we'll be back here in the column with the November issue. — IVOR W. COLLINS, *Secretary,* 28 Sherman Road, Wakefield, Mass. HENRY AVERY, *Assistant Secretary,* Pittsburgh Coke and Chemical Company, Grant Building, Pittsburgh 19, Pa.

1942

J. J. Quinn writes from California that he has been on the road more than half the time since our reunion a year ago. We trust he means this figuratively and not literally, for it would be not only a comedown but also a slowdown for our ace jet pilot. He goes on to report that our class newlyweds, Maxwell and Patricia Lou Kaplan, "have just conducted a tremendous open house party for their many friends in the Los Angeles area. Maxwell's activities in the investment counseling field are continuing to provide profitable income to his local clients.

"As for J. J. Quinn, I have been deep in preparation for the first flight of Northrop's new supersonic jet trainer, the T-38, later this year. It has been my privilege to attend numerous conferences and to give periodic briefings at Dayton, Washington, and Randolph Field in preparation for the incorporation of our new trainer into the Space Age Air Force." Our best wishes to J. J. in his work, and our thanks for his contribution to the security of all of us.

Carl McGinnis writes from Washington, D. C., that he is working with the Nuclear Data Group. Carl reports that after three years in the Navy as a torpedo bomber pilot, he went to the University of California in Berkeley to take a Ph.D. in Physics, which he received in 1952. He is enjoying a life of bachelorhood in the

nation's capital, and is looking forward to our next class reunion. In addition to his other duties, Carl has accepted the position of special gifts chairman for our Class for the 1959 Alumni Fund.

Both a promotion and a commendation are in the news for Lieutenant Colonel Philip E. Phaneuf. Phil received a certificate of achievement for outstanding service as an engineer battalion commander with the Eighth U. S. Army Support Command in Korea. At a recent meeting of the Inland Daily Press Association, Alvin G. Waggoner was the speaker and pinch hitter for Dr. William M. Holoday, director of our guided missile program. Al is executive assistant to Dr. Holoday. In his talk, he warned that Russia may still have a spectacular outer space trick or two up her sleeve. He also said he is confident that this country's long-range program will guarantee its maximum effective use of outer space.

S. Christopher Peek, Jr., was one of 19 engineers presented by the Sylvania Lighting Products Company with patent award certificates for work of major significance to the electrical lighting industry. Chris was responsible for the development of an improved induction lamp operated by radio frequency power input to render a brighter and more uniform light for movie film printing. He also received a patent for a flat-plate electroluminescent image display device. He joined Sylvania in 1950 and is now manager of the engineering applications section. Chris is a member of the Illuminating Engineering Society, the Institute of Radio Engineers, Tau Beta Pi, and Etta Kappa Nu. A few months ago, we reported that T. Q. Eliot joined the Texas Butadiene and Chemical Corporation of Houston, Texas. Ted has now been promoted to the position of head of the Process Technical Service Department. He will be responsible for process activities and economic evaluation of the corporation's new butadiene and aviation gasoline plant at Channelview, which came "on stream" early in 1957.

Rex B. Beisel, Jr., has just been appointed assistant to the general manager of the Geometric-Horton Division of United-Greenfield Corporation of New Haven, Conn. After graduation, Rex was employed with the Bridgeport works of the Aluminum Company of America as plant industrial engineer, then worked for five years with John L. Schwab and Associates, a Bridgeport, Conn., firm of management consultants. He will continue as manager of the Industrial Engineering Department of the company. It is interesting to note that Rex's father is the designer of the Navy Corsair airplane which was manufactured by Chance Vought Company in World War II. Rex and Mary Beisel have four youngsters and are residents of Bridgeport, Conn. Another promotion has been announced for William R. Johnson of the Associated Spring Corporation of Bristol, Conn. Some of Bill's activities were reported in the March, 1958, issue. His latest advancement has been to the position of assistant director of research and development.

Announcements of technical papers include Morris A. Steinberg of Horizons Incorporated on "Breeder Blanket Preparation by Fusion Electrolysis" at the fourth Nuclear Engineering and Science Conference. At the same meeting, A. Carleton Jealous of Union Carbide Nuclear Company talked on "Reprocessing Costs for Fuel From a Single-Region Aqueous Homogeneous Reactor." At the Institute of Radio Engineers Convention, David VanMeter of Melpar, Incorporated, presented a paper, "Detection as a Statistical Decision Problem." At a joint meeting of the American Meteorological Society with the American Geophysical Society, papers were presented by Thomas A. Gleeson on "Probability of Observing Specific Phenomena from Network Stations"; by Robert M. Cunningham on "Details of Atmospheric Structure in and Around Bahaman Cumulus"; by William H. Haggard on "The Birthplace of North Atlantic Tropical Storms"; by Harry F. Hawkins, Jr., on "Hurricane Winds at Flight Levels Related to Low-Level Wind Data"; and by Jerome Namias'41 on "Improvement in Extended Forecasting Resulting from Employment of Numerical Methods."

Our changes of address are relatively few this month. Leon A. Baghdoyan has moved to Hillsboro, N.H. Edward S. Campbell is with the New England Telephone Company in Providence, R.I. Robert A. Frost is now in Wellesley Hills, Mass. Mrs. John G. Kressman has moved to Trenton, Fla., from Riegelsville, Pa. Ervine M. Rips has moved across the Hudson River to Roosevelt, N.J., and Joseph E. Welsh is now living in Brookline, Mass.

Your secretaries hope that one and all have been enjoying long cool drinks while reading through this issue of The Technology Review. We wish you and your families a very pleasant summer and look forward to continuing this column in the fall. — J. J. QUINN in Hawthorne, Calif.; BOB KEATING in East Alton, Ill.; ED EDMUNDS in Albuquerque, N.M., and LOU ROSENBLUM, *Secretary*, Photon, Incorporated, Cambridge 41, Mass.

1943

Ben Parran was appointed manager of Ordnance Sales at General Electric in April, which moved him from Santa Barbara, Calif., to Pittsfield, Mass. Ben joined G.E. in 1951 as a product planner in antisubmarine warfare and was doing Navy sales and intradivision liaison prior to this move. Edward Lorenz presented a paper at the May National Meeting of the American Meteorological Society on "Nonlinear versus Linear Objective Weather Prediction."

John Ward and four other staff members of the Servomechanisms Laboratory of M.I.T. are authors of a new book, *Notes on Analog-Digital Conversion Techniques*, which gives a detailed exposition of theory and design. Charles F. Chubb has been appointed to the position of engineering department head for Naval Armament Systems in the Surface Armament Division of Sperry Gyroscope. His new duties will consist of directing the design and development of precision radars and missile control systems for the Navy.

These notes are written in May, before our 15th reunion, but you won't be reading them until July. Those of you who will not have attended will find a complete summary of what took place at Cape Cod in the November issue. It's been a pleasure writing these notes for the past five years, and I appreciate the many items of news which classmates have sent to me. Because of your support, our Class has missed only about two issues in the last five years, which is something to be proud of. — RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Conn.

1946

As of this writing the questionnaires included in Herb Hansell's spring letter are coming in at a rapid rate, for which I wish to thank everyone. We'll start reporting that news next fall, using this month's column to finish up the last few remaining older ones.

Donald Burke, who was with the MKM Knitting Mills in Manchester, N.H., has pulled up stakes; and he and Pat and the three children live at 2424 Fairway Avenue South, St. Petersburg, Fla. Don hopes to get into consulting work on advanced home building, geodetic dome construction, and similar work. Harvey S. Freeman is the owner of the Independent Engineering Company, engaged in the design and construction of automatic and semiautomatic press feeding and extracting and interpress transfer equipment, as well as tank automotive research and development. He is also a part-time special instructor in physics at Wayne University in Detroit. Harvey is active on the Farmington, Mich., Planning Board, and the Freemans and their three children live at 29553 Lochmoor Avenue in that city. Robert C. Urquhart is a missionary under the Presbyterian Church in the U.S.A. He is presently assigned to pioneer work in industrial evangelism at the Presbyterian Mission in Taegu, Korea. His mail address is A.P.O. #18, San Francisco, Calif. Bob is married and has three children, the latest of whom was born in Korea.

Chandra B. Saran is the head of the Jeep Manufacturing Division of Mahindra and Mahindra Ltd., Bombay, India. His work involves a lot of traveling, and he has made seven extensive trips to the U.S.A. and all around Europe. He is married, has two children, and lives at 43 Warden Road, Bombay 26, India. Roberta Kohlberg French (Mrs. Richard H.) is busily engaged in engineering a family, having produced four new models since the formation of the French company. When not changing diapers she helps run the local P.T.A., Women's Republican Club, and other organizations which continually require the services of busy, successful executives. Alan D. Stone is associated with the Independent Nail and Packing Co. of Bridgewater, Mass., a family business engaged in the manufacturing of special screws and nails and other wire fasteners. Alan lives at 25 Chilton Road, Brockton 55, Mass. He is active in many local affairs. Edwin Smith received his M.S. in Business Administration from the University of Rochester, N. Y., in 1948 and worked for seven years with Ernst and Ernst in public accounting work. He received his Certified

Public Accountant certificate in 1953. Since 1955 he has been assistant to the treasurer of E. W. Edwards and Son, Syracuse, N. Y. Ed is married, has three children, and lives at 98 Skyview Terrace, Syracuse 9, N. Y.

John R. Green is a member of the staff of Wallace Clark and Co., Inc., a firm of management consultants in New York City. He is married, has three children, and lives at 1630 Lake Road, Webster, N. Y. He writes, in a questionnaire received last year: "It seems as if all I do is travel, since my job takes me all over. Encountered Ted Doyle'47 at the airport in Rochester recently. Ted now lives outside Albany. He reports that Bill Fraser '47 died in Cincinnati in 1957 of a bad heart brought on by polio. Met Fred Ross in New York City, Fred Innes in Buffalo. Fred Innes was job hunting. It seems that every other guy in '46 has changed jobs in the past year, myself included. Talked to Jim Loweree and Jim Murphy on the phone when I was in Los Angeles." Walter A. Sauter is head of the Design and Development of Automatic Flight Controls Department of Lear, Inc., Santa Monica, Calif. Walt is married, has two children, and lives at 19667 Valley View Drive, Topanga, Calif. Adolf Bertsch is vice-president and general manager of the AEC Engineering and Construction Co., specializing in industrial engineering construction with offices in Los Angeles (a juicy area for that type of business if I ever saw one). The Bertsches and two children live at 11227 Gaynor Avenue, San Fernando, Calif. Thomas G. Smith is a plant engineer for Todd Shipyards Corp. in San Pedro, Calif. There are four little Smiths, and they all live at 3632 Emily Street, San Pedro, Calif. Tom is secretary-treasurer of the Southern California section of the Society of Naval Architects and Marine Engineers.

After 10 years with Pierce and Stevens Chemical Corp., winding up as director of technical sales, Frederick J. Ross, Jr., is now manager, Ceramic Fiber Project, at the Carborundum Co., Niagara Falls, N. Y. His job includes management of all phases of ceramic fiber production, sales, accounting, development, and so forth. The product is FIBERFRAX, a new product of the Carborundum Co., having potential uses in missile, jet, and nuclear fields, since it is useful continuously at temperatures above 2,000 degrees F. Fred is married, has three children, and lives at 139 Dorset Drive, Kenmore 23, N. Y. Ned Spencer is engineer-in-charge of Wheeler Laboratories' new Smithtown, Long Island, laboratories, which are devoted to development of specialized microwave antennas. Ned is married, has three children, and lives at 7 White Oak Drive, Port Washington, N. Y. Sadettin Güntürkün received his M.S. in Aeronautical Engineering from Brooklyn Polytechnic Institute in 1948, and is now a lieutenant colonel in the Turkish Air Force. He is stationed at the Eskisehir, Turkey, Air Material Area, and is the director of maintenance, repair, and overhaul of all air force equipment. He is married, has two children, and lives at Ikmal Merkezi, Eskisehir, Turkey. John L. Norton is a supervisor of a test unit working on rocket engine controls for General Electric in Schenectady, N. Y. His work takes him frequently to Los Angeles. John, Priscilla, and the two children live at 5 Cherry Lane, Scotia 2, N. Y. Last summer Ralph Krenkel and his family visited the Nortons. John reports that Ralph works for Republic Aircraft on Long Island. Edwin H. Tebbetts is a group actuarial assistant working on corporate pension plans for New England Mutual Life Insurance Co., Boston. Ned is now happily married, and he and Priscilla plan a belated honeymoon in the form of a five-week trip to Europe this summer. When I first heard of this trip, I wrote Herb Hansell suggesting an immediate independent audit of the class treasury. However, everything seems to be in order; so I guess we can chalk up this affluence to 10 years of miserly bachelorhood.

This winds up a year of reporting. We hope everyone will enjoy the summer and look for us again next November. We'll have many interesting items to report. For instance, how marriage has broken up the Gliedman Orthodontic team; John Pollard's special gardening hints; Bob Spoerl's report of his many encounters with '46 men; and much more. Be sure and kick in to the Alumni Association so you won't miss it. — JOHN A. MAYNARD, *Secretary,* 15 Cabot Street, Winchester, Mass.

1947

Your Correspondent has something to report about himself, for those of you who may be interested. Since my last column in the April issue, I've been transferred to the West Coast, and am now making my home in Los Angeles. Since my arrival, most of my time has been spent getting our new factory running smoothly, and, incidentally, endeavoring to get myself settled in new surroundings. Anyhow, should you traveling engineers find yourself in this vicinity, the M.I.T. mug's always full.

On the nuptial side, received a note from Don Thomsen advising me that he had been married to Linda Rollins Leach of Gadsden, Ala. Don and his new wife are presently residing in New York, where Don is a university and institute representative for International Business Machines.

Charles F. Brodersen has been appointed assistant to the president, the American Ship Building Company, Cleveland, Ohio. Ed Rosenberg advises that he's an instructor at Danbury State Teachers College, Danbury, Conn.; he's presently residing in Ridgefield, Conn.

In the realm of scholastic achievement, Bernard Morrill, who was on the science faculty of Swarthmore College, is the recipient of a National Science Foundation Science Faculty Fellowship Award at the University of Michigan. He was one of 48 chosen from a group of 440 — congratulations! At the 55th meeting of the Acoustical Society of America, held in Washington, D. C., Jerry Cox, who is presently with the Institute for the Deaf, St. Louis, Mo., gave a paper concerning a system for the measurement of noise exposure. At the same meeting, Bob Kraichnan was chairman of a session on Sound Generated by an Unsteady Flow, and Harold Tarpley was a coauthor of a paper on "High Frequency Strain Gauge and Accelerometer Calibration." Vincent Haneman is chairman of the education committee of the Institute of Aeronautical Sciences; and at the 26th annual meeting of the group, during discussions on the subject, several penetrating and thought-provoking points were raised, particularly one concerning a degree of mental dissatisfaction necessary to insure continued desire for learning. Vince will also preside at a business meeting on aeronautical sciences at the 66th annual meeting of the American Society for Engineering Education, at the University of California at Berkeley. John May of the Bell Laboratories gave a paper on "Precise Measurement of Time Delay" at the Institute of Radio Engineers Convention in New York. In Chicago, at the 1958 Nuclear Congress, Herb Isbin of Esso Research coauthored a paper on "Two-Phase Steam Water Pressure Drops." He explained University of Minnesota Gamma Irradiation Facility at the sixth Hot Laboratories and Equipment Conference.

Dr. Ed Bennett, who graduated in Course VI and then went on to a Ph.D. in Psychology at Purdue, spoke at a forum meeting of a church group in Lawrence, Mass., on "Signs of Mental Health"; Dr. Bennett is associate director of the Bio-Mechanics Laboratory at Tufts. John McCabe coauthored a paper on "Climatological Fallout Patterns," which was presented at the 165th national meeting of the American Meteorological Society. Marty Judge has been appointed production and engineering manager of the Electronic Chemicals Division of the Cherokee Chemical Company in Danville, Pa. Closer to Massachusetts, Bill Harper's position as chief of the consulting service of the Greater Providence Chamber of Commerce won local attention with a Sunday supplement article, including picture, concerning Bill's work in free consultation for small business people in Rhode Island.

Address changes in the past few months haven't been as numerous as previously, and are herewith listed. *Arkansas:* Pine Bluff, Richard E. Weaver; *California:* Fullerton, George D. Gould; La Jolla, John A. Hugus; Redondo Beach, Marvin W. Sweeney, Jr.; *Georgia:* Marietta, Vernon J. Sholund; *Illinois:* Chicago, Richard L. Carter; Skokie, John K. Reddersen; *Massachusetts:* Cohasset, Walter P. Kern; Concord, Parker Symmes; Dover, Robert S. Jackson; Salem, David F. Clapp; Wellesley Hills, Charles R. Whelan; *New Jersey:* Berkeley Heights, Quentin D. Groves; Passaic, John M. De Bell, Jr.; Summit, Harold F. Schwenk, Jr.; *New York:* Beacon, Charles L. Bauer; Bronx, Michael J. Lipton; *Ohio:* Akron, Robert D. Carpenter; *Oklahoma:* Claremore, Howard Grekel; *Pennsylvania:* Fullerton, Richard J. Dorfman; Philadelphia, David Joseph; *Tennessee:* Alcoa, Joseph D. Stout; *Utah:* Salt Lake City, Bertrand D. Langtry; *Brazil:* Sao Paulo, Ferdinand S. Veith. Your Correspondent hopes that all his readers have a most pleasant summer; send me news. — ARTHUR SCHWARTZ, *Secretary,* Kleen-Stik Products, Inc., 8626 South San Pedro, Los Angeles 3, Calif.

1948

This month's news consists mainly of promotions, awards, and talks. I guess the spring air hasn't affected the few bachelors we have left, because, surprisingly, I didn't receive any marriage announcements!

Congratulations are in order for John W. Murray, upon his appointment as manager of Research, Development, and Engineering, Emhart Manufacturing Co., Hartford, Conn. John's department develops new products for Emhart's nine manufacturing plants in Connecticut, New York, and abroad.

R. Clark DuBois was recently appointed assistant chief engineer of Ashcroft gauges by Manning, Maxwell, and Moore, Stratford, Conn. Clark presently holds 10 U.S. patents and is coauthor of a technical paper on nuclear instrumentation. Good luck, and our best wishes, Clark!

Also to be congratulated is Abraham I. Dranetz, who has recently been elected a vice-president of Gulton Industries, Inc. Abe will assume the responsibilities of general manager of a newly created instrumentation division in addition to the main company's vice-presidency. He also presented a paper, jointly with one of his business associates, at the 55th meeting of the Acoustical Society of America in May. The topic was "Techniques for the Measurement of High Intensity Sound." Assisting in the presentation of a paper, "Electromechanical Behavior of the Bender-Activated Tonpilz," at this meeting was N. Grier Parke, 3d.

Our Class was also represented at the 165th National Meeting of the American Meteorological Society in May. Morris Tepper, who is chief of Severe Local Storms Research Unit, Office of Meteorological Research, U. S. Weather Bureau, Washington, D. C., spoke on "The Formation of Atmospheric Gravity Waves on an Inversion Surface by the Transit of an Upper-Air Isotach Maximum." Another Alumnus, Lester Machta, spoke on "The Use of Carbon-14 as a Tool in Meteorology."

Members of the Hartford, Conn., Amateur Radio Association heard Norbert E. Andres discuss servo-systems and automation at their April meeting. Norbert is Servo-System Chief Engineer at the Norden-Ketay Corp. in New Haven, Conn.

Dean S. Ammer, Executive Editor of *Purchasing* magazine, assisted the editor in a presentation before the members of the New England Purchasing Agents Association, at their recent meeting in New York. The subject of discussion was "How Transportation Affects Purchasing Profits."

Dr. Arthur R. T. Denues, Deputy Director of the Sloan-Kettering Institute for Cancer Research in New York City, was guest speaker at the 1958 Cancer Crusade "kickoff" luncheon in Baltimore, Md. Arthur is one of the nation's foremost authorities in the field of chemotherapy, and his talk was centered around the progress to date and the outlook for the future of combating cancer through the use of chemicals.

Dr. Tau-Yi Toong, Associate Professor of Mechanical Engineering at M.I.T., has recently been awarded a Guggenheim Fellowship for study of problems in combustion aerodynamics. To him go our good wishes and heartiest congratulations!

Once again, honor has been bestowed on one of our classmates. This time the spotlight is on Bernard M. Gordon, President of EPSCO, Inc. Bernie has been selected as one of the nine "Outstanding Young Men of Greater Boston" for 1957, by the Greater Boston Junior Chamber of Commerce. His citation reads, in part: "At age 27, Mr. Gordon formed EPSCO, Inc., and became President at 28. A graduate of M.I.T., he holds 90 patents issued or pending. He is a consultant on the Atlas Intercontinental Ballistic Missile prime contract program, was instrumental in designing specifications for the first air traffic control system, designed and instituted the manufacture of the world's first high-speed data translator, and is the inventor of the Simulator for Ballistic Missiles." This is a great tribute, Bernie, and we're mighty proud of you!

Harvey Freeman'46 received a good deal of publicity recently in the *Detroit Free Press*. Harvey had devised a suit of armor in compliance with a request from the Detroit Police Department, and he personally demonstrated the suit, under a hail of gunfire. Indications were that the test was a success.

Joseph C. Fantone, Jr., has recently been appointed chief equipment engineer at the Hartford Works of the Underwood Corp. Good luck to you, Joe, in your new job.

This month's issue seems to be full of "bouquets"; but then, we're not surprised at any of the accomplishments of our Alumni — we were such bright and promising students! — R. H. HARRIS, *Assistant Secretary*, 26 South Street, Grafton, Mass.

1950

Another volume of life of the Class of 1950 brings news of the following potential members of the Class of 1980. James Michael Byrne was born February 4, 1958, to proud parents Phil and Jean. Phil is still with U.S. Time in Waterbury; and when I saw him at the Walker Assembly Ball in April, he had managed to show up with an advance copy of next year's Timex watch. James M. becomes number four in the Byrnes household of children. The others are Phil, Jr. (6), Tommy (4), and Cathy (2). Jim and Grace Baker added Daniel R. to their morning roll call out in Terre Haute, Ind., on December 14, 1957. Dan joins his brother Stephen in any and all mischief that is conspired against their charming mother.

And speaking of roll calls, the John McKennas (our neighbors over the hill) hold early reveille each morning while the following children pass in review: Mary Lou (5), John Jr. (3), Stephen (1½), and young Carol (born February, 1958). Jack is with Boston Gas Company and for the past years has been working on converting various localities from manufactured gas to natural gas. His biggest project right now is the conversion of Boston Proper — it is a six-month project running into $4,000,000 and many long hours and numerous headaches, but so far it is progressing very satisfactorily. Another late entry all the way from Cali, Colombia, is Alberto Romaguera, who arrived on March 26, 1958. Mariano and Virginia sent special announcements in their native Spanish, and thank goodness my wife Ruth studied Spanish in school so that I received special translation. Nano is doing quite well in Colombia. He is chief engineer at a sugar plant and has been in charge of their current expansion program.

Ed Adelson left the Hughes Aircraft Co. in March, 1957, to join the Chrysler Corporation Missile Operations as managing engineer, Field Engineering Department. Robert Burke resigned as electrical staff leader at Congoleum-Nairn in 1956 to attend the University of Michigan. He received his master's degree in instrumentation and then joined E. I. du Pont de Nemours as research engineer in their Mechanical Development Laboratory in Wilmington, Del. Dr. Louis Capozzoli, Jr., is vice-president and chief engineer of the Engineer's Testing Laboratory, consultants on soil mechanics and foundation problems. William Dickinson returned to this country last July after serving for three years as head of the Physics Department, University of Indonesia, Bandung, Java. He is now a research physicist with the one megawatt "swimming pool" reactor at the University of California Radiation Laboratory in Livermore, Calif.

Al Dell'Isola is presently working as materials engineer for the U. S. Corps of Engineers in charge of field evaluations for the New England Division. Dr. James Flanagan is now with Bell Telephone Laboratories in Murray Hill, N. J. Arnold Greenberg is working with the California State Department of Public Health in Berkeley, Calif. Roy Hale, now a captain in the Air Force, is stationed at Headquarters Air Research and Development Command, Andrews Air Force Base. He is now acting chief, Dynamics Branch, Directorate of Astronautics. Oswald Honkalehto joined the faculty of Carnegie Institute of Technology last September as a senior research fellow in the Department of Economics. John A. Losh is working in Corning, N. Y., for the Corning Glass Works. James Stevenson received his doctorate and is now with the Physics Department at Georgia Tech. Art Wolters, wife Pat, and son Jimmy (3), moved south last November due to Art's transfer from Du Pont's Niagara Falls Plant to the Memphis, Tenn., plant. Benjamin Wood is working for the Aircraft Research Co. in Baltimore, Md. Fred Wooten joined the University of California Radiation Laboratory on July 1, 1957.

I also have half a dozen weddings to report on. Some are a little belated, but still news. George and Eloise Basta were married June 15, 1957, and are now living in La Grange, Ill. Herbert Benington and Merithew Hills were wed January 11, 1958, in Weston, Mass., and now live in Los Angeles, Calif. Al Petrofsky was married to Margaret O'Connor of Brookline, Mass., on September 14, 1957. Al is project engineer for Morrison-Knudsen Co. on a Metropolitan District Commission water tunnel project in Allston, Mass. Ulysses Pournaras and Irene Bouzoucos were married on February 2, 1958, at

Saint Barbara's Greek Orthodox Church in New Haven, Conn. Ulysses is a consulting naval architect and marine engineer with the United Operators Shipping Agencies Corp., N. Y. Herb Voss was married to Betty Jane Arnold of Springfield, Ohio, at Wright-Patterson Base Chapel on September 28, 1957. Herb, now first lieutenant, is project engineer, Analysis Section, Dynamics Branch, Aircraft Laboratory at Wright-Patterson Air Force Base. He was a jet flight instructor at Craig A.F.B., Alabama, before his assignment to Wright. Daniel Ziedelis was married to Douglass Louise Robertson on May 30, 1956. They live in Lexington, Mass., with their daughter, Robin Elizabeth, born March 21, 1957.

Metrix Corporation has been formed in Newton, Mass., by a group of senior engineers formerly associated with the Electronics and Instrumentation Division of the Baldwin-Lima-Hamilton Corp. Malcolm Green, one of the founders of the company, will be in charge of handling the manufacturing division of the company. The newly formed company will manufacture instrumentations for use with strain gages and strain gage devices, and will fabricate specially engineered systems based on these devices. The company's first product will be a unique test bridge to produce very accurate millivolt per volt signals to check out system instrumentations.

Myles Spector, formerly president of Insuline Corp. of America, has been appointed sales manager of American Geloso Electronics, Inc., New York City. The firm is the North American sales agency for the Geloso Hi-Tone miniature tape recorder, the first Italian electronic sound device to be imported here for commercial use. Myles, who joined American Geloso in May, 1957, established a most enviable feat by establishing sales distribution for the Geloso tape recorder in practically all markets from coast-to-coast and from Canada to Mexico within four months. Now, as sales manager, he will continue traveling the North American continent supervising the firm's sales representatives in the field and helping them best serve the more than 100 Geloso wholesale distributors.

Chuck Herbert writes the following from San Jose, Calif.: "My work at the Atomic Power Equipment Department of the General Electric Company has varied widely and has been both challenging and satisfying. During the first part of the year I was concerned with administrative problems of setting up the organization for manufacturing fuels for commercial atomic reactors. I then reverted to my more familiar role of a manufacturing engineer and assumed the responsibility for selecting or designing, ordering, and installing equipment and facilities to make nuclear fuels by powder metallurgy techniques. My next task is to 'de-bug' this equipment, train the operators, and bring the facility to its rated capacity at planned cost. It has been a fine experience to work with a good group of colleagues on some knotty problems in a fascinating new field.

"The surrounding area is all that I have sought for years. I live 50 miles (about an hour by car) from the scenic, cultural and epicurean attractions of San Francisco without having to endure the dampness and fog usually associated with that city. The weather in San Jose is warm, but not hot, all year; and the sun shines consistently 10 months of the year. The San Francisco opera season has been great, the plays are good, and the symphony season promises some memorable performances. I am very fortunate to be sharing a lovely apartment with Ed Strong, an excellent cook, pleasant drinking companion, and fine outdoorsman. Ran into Al Kendrick here in our department. Also Fred Kurzweil, who teaches at Stamford. I am still single, but occasionally am beginning to catch myself evaluating the matrimonial attributes of my charming companions from the City or the Peninsula."

And from Franklin, Ohio, Dick Poirier brings us up to date on his activities since June of 1950. "First of all, I stayed around M.I.T. long enough to obtain an S.B. in Course XV in 1951 along with another round of metallurgical electives. I then worked at the Hamilton Division of the Black-Clawson Company, Hamilton, Ohio, as a metallurgist for two years. In 1953, I was transferred to the Keuthan Foundry Division in Middletown, Ohio, as assistant superintendent responsible for just about everything. In May, 1956, I purchased part of A. and B. Foundry, located in Franklin, Ohio. In February, 1957, Stanley Watkins, who works for Armco Steel, purchased the other part of the business; and we incorporated the business in January, 1958.

"Things have been quite rough so far; I imagine almost all new businesses have a rough time getting well established. However, we see a good future for our business. We have 10 employes now and are beginning to add new accounts almost every week. We have just received our license from the International Nickel Company for producing a licensed nickel-tin bronze called Ni-Vee and are really getting an education in the non-ferrous casting field. So far we produce the aluminum alloys and most of the standard grades of bronze alloys in castings up to 400 pounds cleaned. My job consists of running the place, from getting the sales to sending out the invoices, so my education at Tech has certainly come in handy.

"Back in 1953, I married Alta Hesselbrock of Shandon, Ohio. She's a beautiful redhead and surely has made things wonderful. We have an angel with red hair and all the beauty of her mother. Jan is three years old and is our pride and joy. Our little boy, Rickey, is about 10 months, and he is a boy all over. Between the two of them, we surely have a wonderful family."

One of our classmates is producing and marketing a handy little novelty that is just the thing for a house full of kids. Thor Stromsted has a miniature trampolene for sale, called Kangaroo Kid. A lightweight aluminum tube frame 38 inches by 24 inches and only 9 inches high with safety handlebar helps children to balance themselves while jumping to their hearts' content. The Kangaroo Kid is being manufactured by Tekay Products Co. in Milwaukee, Wis.

Jay Bedrick has been appointed chief mechanical engineer for Integron, Inc. As head of the Engineering Departments, Jay will be responsible for the consulting engineering, machine design, tool engineering, and special project section of the company. Integron, located in Waltham, Mass., has successfully completed research and development projects for the Air Force and the Army in both missile and rocket fields. In addition they have provided New England Industrial Films with solutions to many production engineering problems in the form of special machine automation, material-handling equipment, and the tooling of products for high production.

From Bill McDonald: "I've been transferred by the Du Pont Company from their plant near Aiken, S. C., to the Engineering Department here in Wilmington. Pat and I already feel as if we are moving back to civilization, although we really enjoyed six warm winters in the deep South. I truthfully enjoyed my assignment at the Savannah River Plant but am looking forward to my new assignment in the Electrical Utilities Consulting section of the Engineering Service Division. While at the Savannah River Plant our family grew to two boys, who are now 5 and 4 years old."

It is with regret that I report the death of John A. Jacobson on March 12, 1958. He leaves his wife Elaine and a baby daughter, Janet Marie. After graduation he stayed on and received his master's degree in 1951. He was a registered professional engineer of the state of Illinois and associated with DeLeuw, Cather, and Co., consultant engineers, Chicago. He specialized as a soils and foundation engineer and took a great pride in his profession before his sudden passing.

And as summer comes peeking around the corner we bring to a close another volume. Have an enjoyable summer; and when you get a chance, drop a line to your class Correspondent for inclusion in next year's news. — JOHN T. WEAVER, *Secretary*, 24 Notre Dame Road, Bedford, Mass.

1951

Marv Grossman has started a new venture that could well serve as a model for all of us. During all the post-Sputnik discussions about the need to train more scientists and engineers, Marv saw how really important it is to keep alive the occasional spark of interest that youngsters have in science and technology. To see that something was done about it, Marv approached the director of the Boston Museum of Science. He is now conducting a Saturday afternoon course at the Museum called "Exploring Electronics" for 26 junior high school students. He starts the kids off with crystal sets and works up. His role as sales manager for H. H. Scott puts him in a good position to solicit contributions for the parts of the more complicated sets. What Marv is doing can have a far greater impact on the future of science and technology than many proposals lamely kicked around before the public. If we had a medal, it should go to Marv Grossman.

There must be some significance to the sixth year after graduation in the profes-

sional life of M.I.T. grads. Recent sessions of various professional organizations had a large number of papers read by men in '51. Let's see, two years in the service followed by two more as an apprentice diaper-changer leaves the fifth year for original work and the sixth to report on it. So it all makes sense(?) Early papers were read last fall at an I.R.E. meeting when John Brean had as his topic "Analog-Digital Converters Applied to Control and Processing Devices" and David Atlas delivered "Radar Aeronautical Meteorology." Before the same group in April Moise Goldstein read "Computer Processing of Bio-Electric Signals." Fred Vanderschmidt was coauthor of "The Use of Tritium as an Ionizing Source in Instruments," delivered before a March Nuclear Engineering and Science Conference; from the announcement of this occasion we learn he is with the National Research Corp. Also in March Tom Weil, who is with Raytheon, reported at an I.R.E. meeting on some work he had done with the amplitron and the stabilotron. In May David Atlas discussed before the American Meteorological Society some observations he had made of meteorological "angel" echoes. His work constitutes impressive empirical proof of the association between angel echoes and meteorologically induced gradients in refractive index.

The Acoustical Society of America witnessed a parade of '51 men in May. George Shumway gave two papers dealing with water-saturated sediments. James Forgie and George Hughes teamed up on a paper on digital computers. David Pridmore Brown spoke on sound propagation in a fluid flowing through an attenuating duct. Robert McPherson, now in the Engineering Research Institute, University of Michigan, read a paper on variations in audio oscillations amplitude. Adone Pietrasanta co-operated with a colleague at Bolt, Beranek, and Newman, Cambridge, on two papers. Charles Maki of M. B. Manufacturing Co., New Haven, spoke on random noise systems. Moise Goldstein had another paper ready for the Western Electronic Show and Convention dealing with synchronous demodulators. Bernard Widrow appeared there, too, to speak on "Propagation of Statistics in Systems."

Classmates spoke at other than meetings of professional societies. In April Albert Cookson, associate director of guided missile activities at Federal Telecommunication Laboratories, spoke on missile programs before officers of the Army Reserve's 139th Guided Missile Battalion. Albert directed the development of the guidance system for the Army's Lacrosse missile. Peter Beierl appeared before a Lions Club meeting in Manchester, N. H., to discuss atomic submarines, on which he has been working at the Portsmouth Naval Shipyard. A newspaper in the home town of Gordon Oxx noted recently the appearance of an article of his in *Product Engineering*. Gordon is with the General Electric Research Laboratories in Schenectady.

There are several who have made it clear that our recently stated conviction that most classmates are married was in error. Marriage notices still come in — a little slower perhaps. Russell Hodgdon, for example, was married to Doris Senfleben of Beverly, Mass., last March. Last December George Bromfield and Myra Clebnik were wed in Lynn, Mass., where George is an industrial engineer with the Signal Manufacturing Co. of Lynn. Thomas McLaughlin married Geraldine McLaughlin of Wilmington in March of this year. George Higgins took the vows with Mary Parker of Wollaston, Mass., in January. George is assistant professor of civil engineering at the University of Massachusetts. A wedding we hadn't heard about until recently joined James Hart and Ancella Weinstein in February of 1957. Jerry Elkind served as the best man. James is project group leader for Motorola. From June, 1954, to June, 1956, he served at Fort Bliss as an instructor.

Peter Lazarkis is now a manufacturer's agent over all of New England for electronic manufacturing firms. His company is the P-J Engineering Sales Co. Irving Obenchain, now a colonel, is attending the Industrial College at Fort McNair in Washington, D.C. For the past three years he has been in the office of the Chief of Signal Corps operations in the Pentagon. He and his wife, Mary Elizabeth, now have three children. Louis Tedeschi was appointed chief of the Fighter-Bomber Section, Flight Control Laboratory, at Wright Air Development Center. Louis spent three years with Kaman Aircraft before joining the Wright staff in 1955. Eugene Machlin has been appointed acting director of research at Utica Metals. He is on leave of absence from his associate professorship of metallurgy at Columbia. An award winner was Edward Carter, with the George Mead gold medal for outstanding engineering achievement in United Aircraft in contributing toward development of helicopter instrument flights. Edward and his wife, Ann, have three children.

Mason Phelps left the fold long enough to earn his Ph.D. in Mathematics at Harvard, but we're pleased to report he is back at Tech with the Lincoln Laboratory. Arthur Metzner is associate professor of chemical engineering at the University of Delaware and recently became a United States citizen; Canada's loss is our gain. Louis Galan was released from active duty with the U.S. Air Force last January and is now in the Aerodynamics and Propulsion Department of Bendix Aviation, Systems Division, in Ann Arbor, Mich. Robert Walter is now in the East Chicago plant of the U. S. Reduction Co. as assistant to the plant manager with full responsibility for purchasing, personnel, and plant engineering. Harry Zimmer was recently transferred from the Atomic Energy Commission's Hanford Operations Office in Richland, Wash., to the Portsmouth Area Office, Portsmouth, Ohio. He is assigned as assistant chief, Operations Branch, and is enjoying his work in using gaseous diffusion to separate uranium isotopes.

Dick Foster left in April for Thule on a transfer within the Peter Kiewit Sons' Co. Walt Stahl is specializing in nuclear medicine and radiation biology in Washington, D. C. He is consulting for the Oregon State Board of Health in the design of a state radiation exposure survey. John Brean collaborated with four colleagues in the Servomechanisms Laboratory at Tech to produce the book, *Notes on Analog-Digital Conversion Techniques*. Allison Newcombe has joined Dewey and Almy as a project engineer. Formerly he worked with National Research Corp., Allied Chemical and Dye, and Bethlehem Steel. He and his wife, Virginia, have three children.

Paul Gibson writes that he recently left Procter and Gamble to join the Commercial Research Division of U.S. Steel. Paul, wife, and two children moved into a Pittsburgh house vacated by Bill Farmer '50. Paul will be engaged in market research for coal chemicals, including benzene, toluene, xylene, and solvent naphthas. He says if any others are engaged in chemical market research, he'd like to hear from them and possibly have an exchange of information. — RICHARD W. WILLARD, *Secretary*, Box 105, Littleton, Mass. ROBERT S. GOOCH, *Assistant Secretary*, Freese and Nichols, 407 Danciger Building, Fort Worth 2, Texas.

1954

My, it's hot! Even the typewriter keys seem loathe to move. But this is our last communiqué of the year, so we'd best spell out our remaining bits of news. Bob Evans writes that the Army and Korea provided an interesting experience, but now he is back at school, studying economics at the University of Chicago Graduate School. This summer he and his wife Lois are touring the southern states, where Bob is researching the economics of pre-Civil War slavery. From Lou Mahoney comes word that he is now the proud papa of Christine Marie, who was born last December 4. Since leaving Uncle Sam, Lou has settled in the Boston area and is working for the Revere Sugar Refinery.

Charlie Smith writes that he is sneaking around as a special inspector in the Mechanical Department of the New York Central Railroad. His headquarters are in East Rochester, N. Y. Carlos Roggero claims that he is the highest member of the Class, living at an altitude of 12,000 feet in La Oroya, Peru. He is currently engaged in fighting the zinc tariff, and holds the title of assistant foreman in an electrothermic zinc plant in Peru. He was married in 1956 and has acquired a black poodle. Marty Cohen has managed to get a message through from New York City, informing us that he is still designing for Skidmore, Owings, and Merrill, architects.

Dean Jacoby has been busy recently, gathering news and issuing announcements. One item that should interest everybody is that Bob Anslow has accepted the job of reunion chairman. So, we're off and flying in our preparations for next year's get-together in Cambridge. Bob has been busy making arrangements; and we'll have more news on the reunion in November, when the next issue of The Review appears. Among the other items from Dean is word that Dan Farkas is still at Tech, hoping to finish there late next year. Frank A'Hearn quit the Air Force in January, took a two-month tour of the United States, and then settled

down in San Francisco with his wife, Margaret. He is now a civil engineer with Porter, Urquhart, McCreary, and O'Brien, consulting engineers. Ed Kaszynski is a project engineer with the Baldwin-Lima-Hamilton Corporation in the Boston area. George Filak is a manufacturing engineer for the Texas Instruments Company, Apparatus Division, while his wife is finishing up at Southern Methodist University.

Dave Chorlian has been laboring in the Research Department of Thomas J. Lipton, Inc., in Hoboken, N. J., since last winter, and was scheduled to marry Thelma Evensen in April. We have no confirmation of the latter, but trust that the wedding took place as planned. George Lamphere is an office engineer for the Charles H. Tompkins Company in Washington, D. C. Phil James acquired his Ph.D. in Chemistry at the University of Illinois a year ago, and has since been instructing the undergraduates of the University of California. Jim Brown, his wife, and their three daughters are living in Cupertino, Calif., where Jim is flying "Demons" for the Navy. Phil Perry married Margaret Phair in Pittsfield, Mass., last April 19. John Graumann served as an usher at the wedding. Phil is a nuclear engineer for the American Car and Foundry Company in Washington, D. C. Andy Kariotis is the manager of a new sales office of the Sprague Electric Company, which was opened recently in Dallas, Texas. Joe Bova got lost in the middle of the Pacific Ocean in April. He is a member of the four-man crew of the 63-foot ketch *Vagabond*, which was on its way from Okinawa to Honolulu. Some 120 miles from Midway Island, the winds and the boat's auxiliary engine all failed at the same time. However, the Coast Guard arrived in the nick of time; and last we heard, Joe and his mates were again on their way toward Hawaii.

In closing, it is with deep regret that we must note the death of Bill Ingraham in Augusta, Maine, on April 1, 1955. — Edwin G. Eigel, Jr., *Secretary*, 3654 Flora Place, St. Louis 10, Mo.

1954G

News releases and information regarding members of the graduate student class have been rarities. Frequent information from you will help make our class notes column less of a rarity.

Several symposiums were recently held in New York City. Hermann A. Haus, Assistant Professor of Electrical Engineering at M.I.T., spoke on "Electron Waves in Microwave Tubes" during the session on background and recent developments at a Symposium on Electronic Waveguides sponsored by the Institute of Radio Engineers. At another session of the I.R.E. Convention, Bob Lerner, who is with the Lincoln Laboratory, gave a technical paper on "Signals with Uniform Ambiguity Functions." James G. Nelson, with the Minneapolis-Honeywell Regulator Co., gave a paper on "Automation of Floated Gyro Drift Measurements" at the Second National Conference on Production Techniques.

Douglas T. Ross collaborated in the preparation of *Notes on Analog-Digital Conversion Techniques*, a new book prepared in the M.I.T. Servomechanisms Laboratory. The book incorporates the authors' laboratory experience with numerical control of machine tools and digital instrumentation that directly records experimental data in a form suitable for processing by digital computers.

On the less technical side, Roswell L. Derby, Needham, Mass., has been appointed personnel director for William Filene's Sons Co. in Boston.

Irving H. Goldenfield is heading a research project to bring together all existing studies of the Melrose, Mass., public schools and will instigate research into areas not yet studied. Some of the areas to be studied include provision in schools for maximum development of all students, balance of offerings, achievement demanded of the students and attitudes of the students toward school and achievement, and the citizens' role in helping the schools maintain their standards.

Nolan T. Jones, at Lincoln Laboratory, informs me that he and his wife had their third child on March 4 — a six-pound girl, Cynthia. Susan is three years, and Nolan T., Jr., is 16 months.

This winter I ended an enjoyable 15-month stay at Smith College where I supervised the construction of two girls' dormitories for the Turner Construction Co. Now I am an assistant mechanical engineer involved with the construction of a manufacturing plant for Western Electric Co. in Columbus, Ohio. Eric is two and one-half years, and his sister, Marcy, was one year last May 25.

That's all the news for now. With your help I'll have adequate news for a column in the next issue. Have a pleasant summer. — Newton Shanbrom, *Secretary*, 824 Gilmore Drive, Reynoldsburg, Ohio.

1955

Once again it's time to bid you farewell for a few months and give the news an opportunity to pile up (we hope). Denny should be back in the Boston area about July, doubtless bursting with news from Greenland. I hope to persuade him to describe some of his exciting experiences in these columns next year. His most recent accomplishment at Thule is the operation of an amateur radio station, from which he has been busily talking to folks via the radio alone and via radio and telephone with the assistance of other eager amateur radio operators. Ellen Dirba got a call in Denver; and Dave Kane, Chick Kane's son who has also been in Thule, had the thrill of talking to his wife in Kansas City. But the real claim to fame in this recent enterprise is contact with Charles Green, VI-A, '57, who was situated at the International Geophysical Year station at the South Pole — some 12,000 miles from Denny. Seems the two have had several chats, and Denny feels that we'll have to send someone to the moon to break this record of long-distance radio communication between Tech men!

Speaking of Ellen Dirba'56, she writes that she moved on the first of May to Aspen, Colo., where she is now working for Fritz Benedict. And that now "anyone coming up for the music festival or the ski season can at least get a free meal!" On April 4 Bob Salow was married in Kew Gardens, Long Island, to June August. The Salows are now living in Allston, where Bob is with Epsco. June, a senior at Emerson, completing her work there as an English and broadcasting major, is on the production staff of WERS-FM.

In the new arrivals department, I got a delightful note from Bob and Mimi Bowman with news of the birth of a daughter, Leslie Ann. The Bowmans are living in Utica, N. Y., where Bob is with General Electric. Many of you may remember Mimi from her Boston University days as Miriam Klein. Gary and Felice Brooks are also celebrating the arrival of an offspring: a son, Andrew Nathan. Also to be congratulated is Charlie Mohr — but for a slightly different reason. He has received a National Science Foundation predoctoral fellowship providing for graduate study until the doctorate is completed. And I think that Dave and Mar Nasatir deserve felicitations, too. Their Weimaraner, Diana, presented them with a magnificent litter of 11 puppies recently!

George Ploussios is now back in the Boston area, living in Arlington and working in Harvard (Massachusetts, not University) at Chu Associates in the antenna and microwave field. He completed six months with the Army at Fort Monmouth last December. Harry and Peg Schreiber and little Meg were in Wilmington recently and dropped by. Harry started back to graduate school at M.I.T. in February after parting company with the Army. This summer he'll be working in Detroit once again. Well, that's the story for this year. Have a good summer, and let us hear from you! — Mrs. J. H. Venarde (Dell Lanier), *Secretary*, 107 Mullin Road, Wilmington 3, Del. First Lieutenant Laban Dennis Shapiro, *Assistant Secretary*, AO3047883, Signal Ionosphere Station, A.P.O. 23, New York, N. Y.

1956

Here we are at the end of our second complete year and 19th article with response from you still increasing.

In a recent letter from the Ivory Tower of Poughkeepsie (only a mile from Vassar) Bert Lippel informs us that he is an Associate Engineer in Technical Planning for computers at International Business Machines Corp. Bion Francis wed Margaret Louise Gale of Harrisburg, Pa., in May, 1957. Bion is with Production Controls Division of M. B. Manufacturing Co. John Morefield became engaged to Mary Anne Bell of Cedar Rapids, Iowa, this May. William Northfield became engaged to Sandra Sabin of Mansfield, Mass., this spring. Bill is stationed at Fort Monmouth, N. J. David Shefrin wed Betsy Kaufman of West Hartford, Conn., in March.

Billy and Irma Caskey announced the birth of a son, Russell Lowell, in August, 1957. Billy is working at Sandia Base near Albuquerque, N. M. Samuel and Dina Cluett announced a son, Jack, last February. Samuel wed Dina Lee Moore of Tucson, Ariz., in October 1956. The Clu-

ett family plans to return to Cambridge in time for the fall term at Tech. Guy and Lee Spencer announced a boy, Thomas Guy 3d, in April.

Robert Barenberg is in his second year of Albany Medical College of Union University. Eduardo del Hierro is in graduate school at Tech. Robert Paschall received his M.S. in Physics at the University of Illinois in February and is working on his Ph.D. Edmund Pease is working on his Ph.D. in Economics at Columbia and is first vice-president of the Universalist Church of New York State. Tuure Wirkki was working in the Capacitor Department of General Electric but returned to school last year and obtained his degree in February.

John Bidwell finished Officer Candidate School at Newport and is now stationed at the Naval Ammunition Depot in Hingham. Tom Cleaver is in the maintenance squadron at Johnson Air Force Base, Japan. Frederic Lupi is in the Army Engineers at San Francisco. Walter Wolfinger is a Naval Air Cadet at Pensacola.

William Hotchkin is an industrial engineer with the Electronic Tube Division of Westinghouse. Gorges Lafontant is working for Perini Construction on the Saint Lawrence Seaway. James Robertson is working at the Army Signal Corps Research Center in New Jersey. Jerome Vielehr is a sales engineer with Magnetics Inc., a corporation formed by Tech men. Howard Watts was working at the Naval Air Station in Jacksonville, Fla., but is now at the Signal Property Office at Fort Devens, Mass.

This composing date is Mother's Day, so you are going to be cut off here — Bye! — BRUCE B. BREDEHOFT, *Secretary*, 1528 Dial Court, Springfield, Ill. M. PHILIP BRYDEN, *Assistant Secretary*, 3684 McTavish Street, Montreal 2, P.Q., Canada.

1957

This month another defection in the ranks was uncovered. Bob Piccus finally admitted that he is now at the Harvard Business School. He will be working for Shell this summer and hopes that any others in the San Francisco area will contact him at Shell Chemical Company, Pittsburg, Calif. Bill Naylor has arrived at Fort McClellan just in time to say farewell to Alan May, who receives his military independence on July 4. On April 18, Ira Skalet and his wife, Ellie, became father and mother to an eight-pound twelve-ounce boy. John D. Armitage, Jr., became engaged in April to Susan Hodge, currently studying at Wellesley. Jack Tiller writes that he is now employed by Hughes Aircraft Company as a field engineer on the Falcon missile and will be sent to Lowry Air Force Base at Denver within two months.

On March 18, the National Science Foundation announced the award of predoctoral graduate fellowships for the academic year 1958-1959. The following members of our Class received awards: Clair W. Nielson, David M. Larsen, Richard D. Smallwood, and Thayer C. French.

Terry McMahon is in New Haven, where he is doing chemical engineering graduate work at Yale in pursuance of a doctorate. He writes that he recently ran into George Waugh, who is both working in New Haven and taking a course at Yale. Virginia Hermann, who spent last summer in Europe (chiefly in Finland and Poland), is planning a return trip this summer. On May 14, Pierre Yves Cathou accepted the Compton Award for leadership and citizenship in behalf of the Lecture Series Committee. He claims that his dual citizenship (of Mexico and France) had no bearing on the award.

Well, this article ends our first full year in The Review. It has been a great pleasure to read your letters and attempt to keep everyone in touch through this column. If you have a minute, drop us a note or ring us up if you happen to be in New York or Boston. — ALAN M. MAY, *Secretary*, 55 East End Avenue, New York 28, N. Y. MARTIN R. FORSBERG, *Assistant Secretary*, 8 Forest Street, Cambridge 40, Mass.

1958

First of all, a warm "Hello" to all the readers, both old and new, of The Technology Review from the infant Alumni Class of 1958. As I occupy this space each month, I'm sure that this will be a pleasant and informative acquaintanceship for the many years to come.

As I write these words to you, I'm taking a few minutes from preparing for my last undergraduate quiz and from the final writing of that familiar bogey of one's last term at Tech — my thesis. So you can understand that this first set of notes will have to be just a few short words to serve as an introduction and means of our becoming better acquainted.

As you and I read these words, however, thesis, Senior Week, Baccalaureate, Commencement, and the President's Luncheon will be just a happy memory and a fitting climax to four years at Tech. To those moving on out into the cold, cruel world at last, the aura of nostalgia ("It was a pretty good four years, at that") is probably already setting in. I'm sure that most of you feel as I do that you want to remember these years and keep in touch between reunions with some of the close friends you've made here. This gives me a chance to insert a plug for the already harassed Secretary-Treasurer of the Class of '58. If you happened to forget to return the card Prexy Bob Jordan sent out to you before the close of school, please be sure to do so or to drop a line with your permanent residence and business affiliation to the Alumni Office or to me. Besides helping the Alumni Office keep track of all of us, this list is also sent to me so that I can contact you; therefore, please make sure you're on file.

Most important of all, as I'm gathering news items to use in these columns I'll need all the scraps of information I can lay my eager fingers on. I'm at least a "by sight" acquaintance to many of you; but to those in the Class of '58 whom I don't know very well or see very often, let me encourage you to please feel free to drop me a line any time. I'll be anxious to hear from all of you, and I'll be able to pass on to the rest of the Class through this column any news you have about yourself and others in the Class whom you happen to run across. Please don't be shy or modest — the truth will out. You can reach me through either one of the addresses listed below; or for those who like to be impersonal, you can write in care of the Alumni Association Office at M.I.T. We are always ready to supply you with the address of a long-lost classmate on request.

As a starter, Yours Truly will be back here at Tech in the fall, through the grace and generosity of the Atomic Energy Commission, working on a master's degree in the new Course XXII (Nuclear Engineering). I graduated (I hope) S.B. in Course II.

The next issue of The Review will be out in November; by that time everyone, including me, will be settled down; and I trust the class job or school address lists will be completed and processed. I'll have a massive list of company or graduate school affiliations, marriages, and other important occurrences dating from our graduation. The "recession" may have cut the size of some of the job offers in '58, but early returns seem to indicate that we still came out right on top as a Class in the job and school hunting departments. As far as the nuptial arrangements are concerned, indications are that this field will continue to offer strong inducements to the graduating members of the Class of '58 who have not yet succumbed. Much more about these developments next time.

In closing, let me picture for you the events of the 12th and 13th we'll all remember. Following the wonderfully exhausting days of Senior Week, we listened to the stirring words of Dean Harold L. Hazen highlighting the Baccalaureate service, for many coming soon after an impressive ceremony bestowing officer commissions in the Army or Air Force. We marched "in awesome array" into the Cage on a beautiful (even for Boston) Friday morning to hear Mr. John McCloy and Dr. J. A. Stratton and proudly to receive that treasured sheepskin fashioned with sweat and a slide rule. The luncheon in Du Pont Court brought to a close one of the most memorable days in each of our lives — a symbol of a job well done.

See you in November. — HERBERT G. JOHNSON, *Secretary*, 484 Beacon Street, Boston 15, Mass. (school address); 99 Price Boulevard, West Hartford 7, Conn. (summer and permanent residence).

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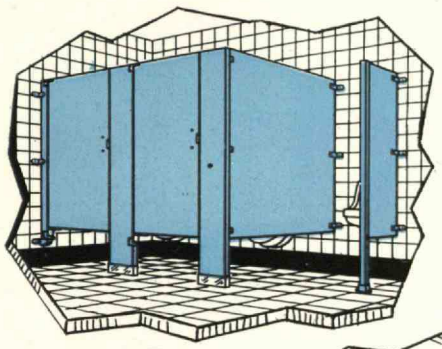

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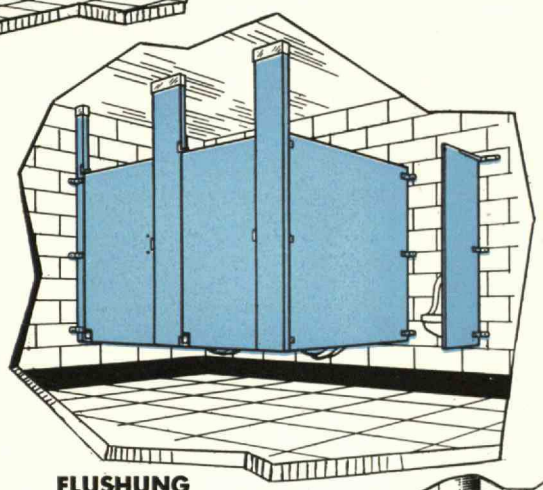

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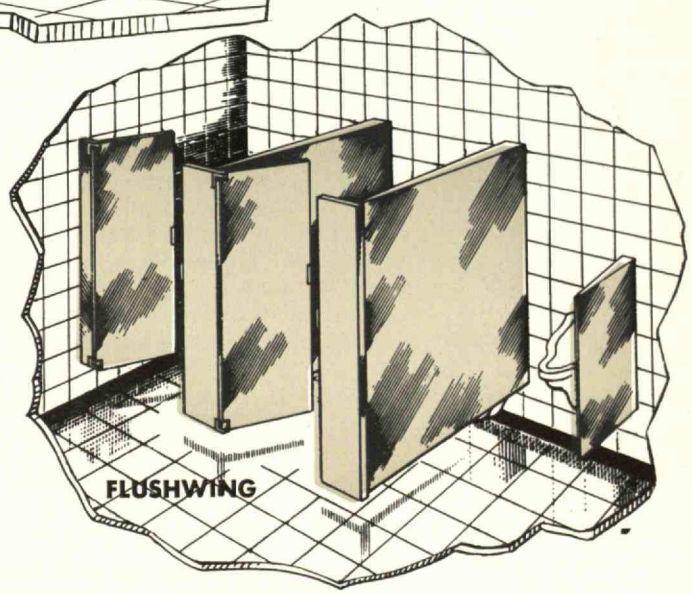

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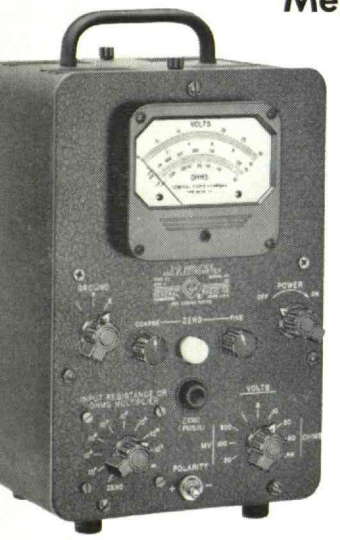

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Besides its multipurpose abilities, the Electrometer is convenient to use. Its switching arrangement allows you to change functions rapidly . . . from high-impedance voltmeter, to low-impedance ammeter, or to a megohmmeter, *without need of accessory multipliers or shunts*. Other conveniences include built-in resistance standards for current and resistance measurements, and for calibration. Guard terminals are provided so that either 2- or 3-terminal measurements may be made. Output jacks, at the rear, permit use as a sensitive d-c amplifier to drive graphic recorders having input resistances up to 1500Ω (5-ma models can be connected directly).

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